Rubber Journal and International Plastics

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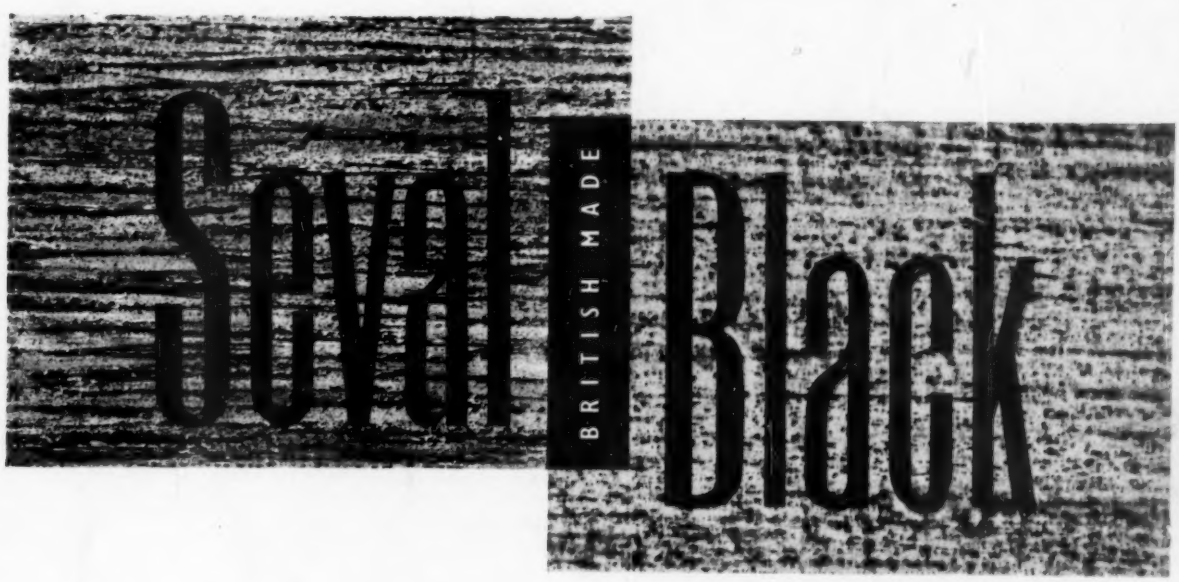

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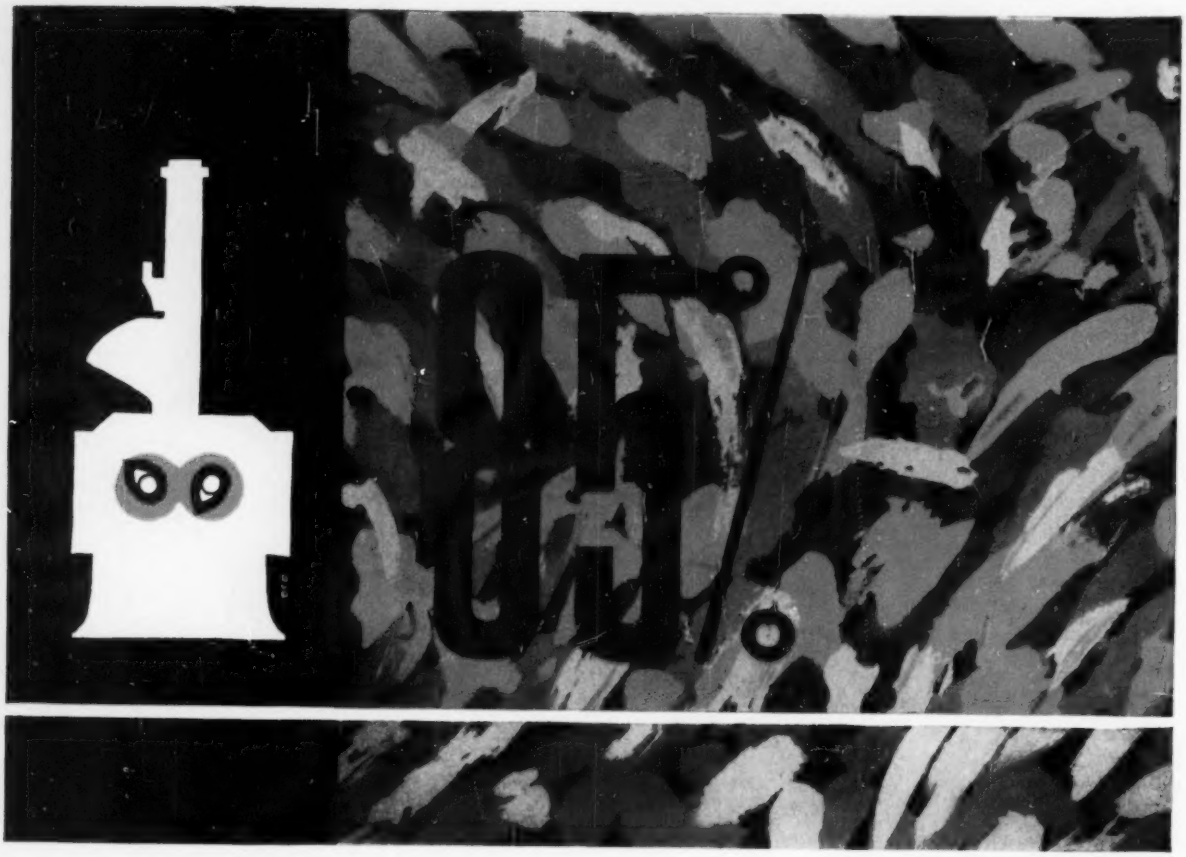

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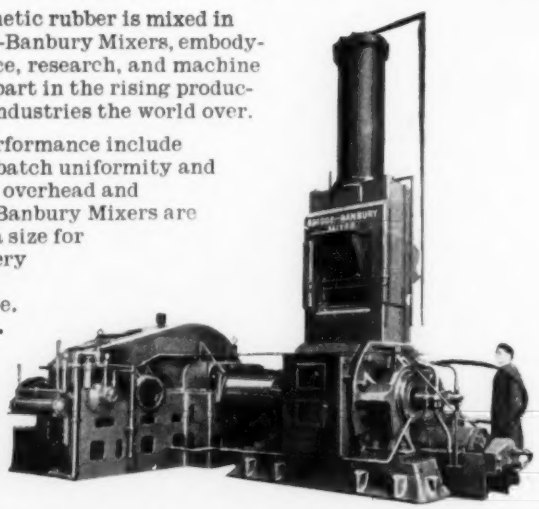

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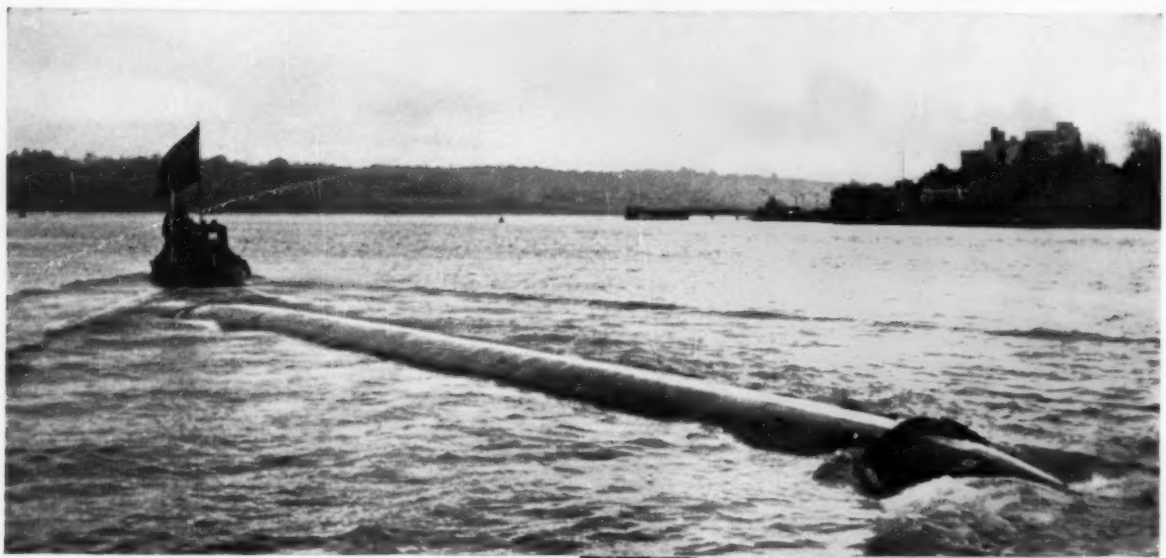

A flexible oil barge, made for Dracone Developments Ltd. from woven nylon cloth coated with synthetic rubber. Photographed on a journey from the Esso refinery, Fawley, to Newport, Isle of Wight, it is 100 feet long with a capacity of 10,000 gallons. The Dracone can be rolled up for ease of handling on its return journey.

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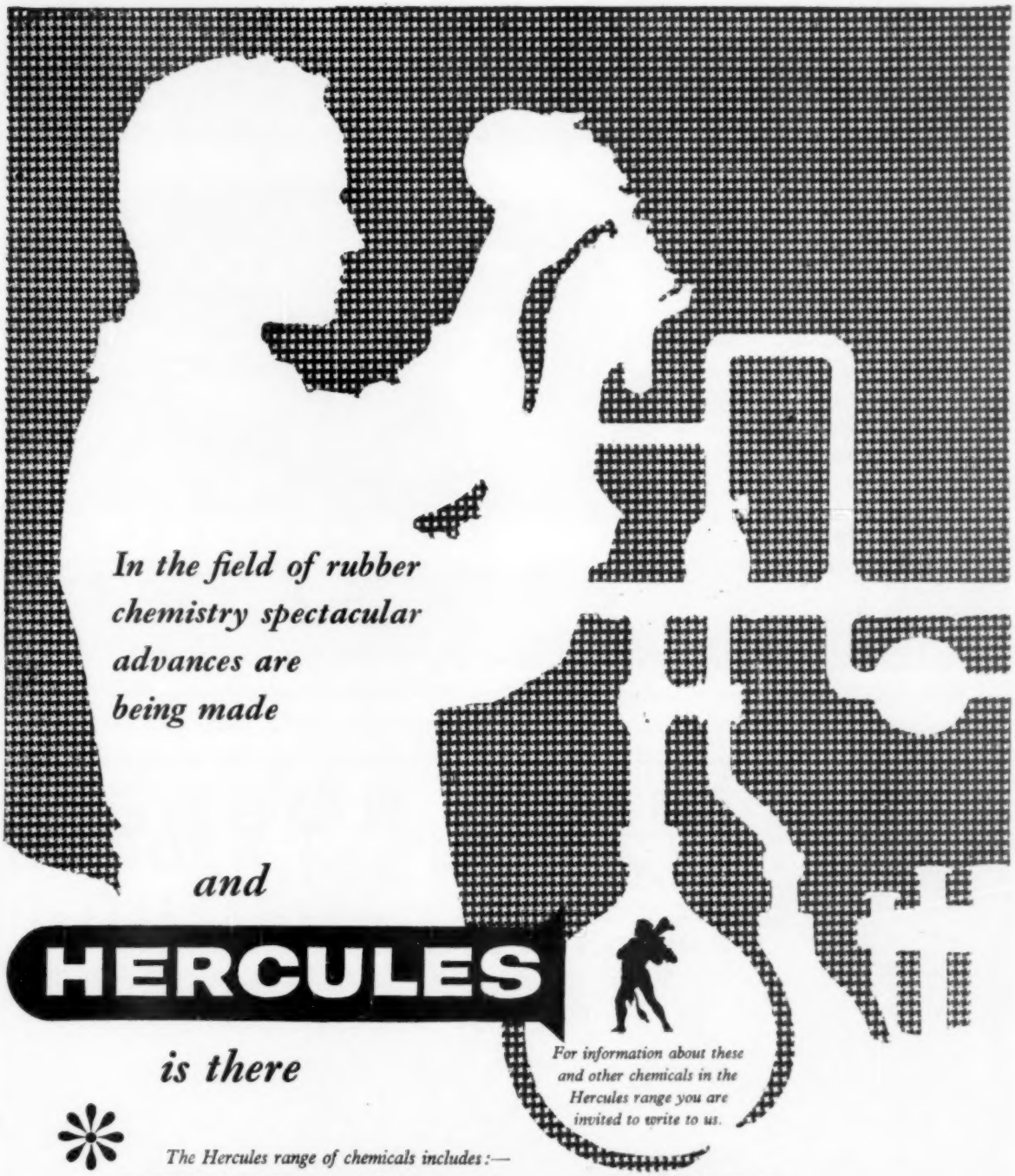

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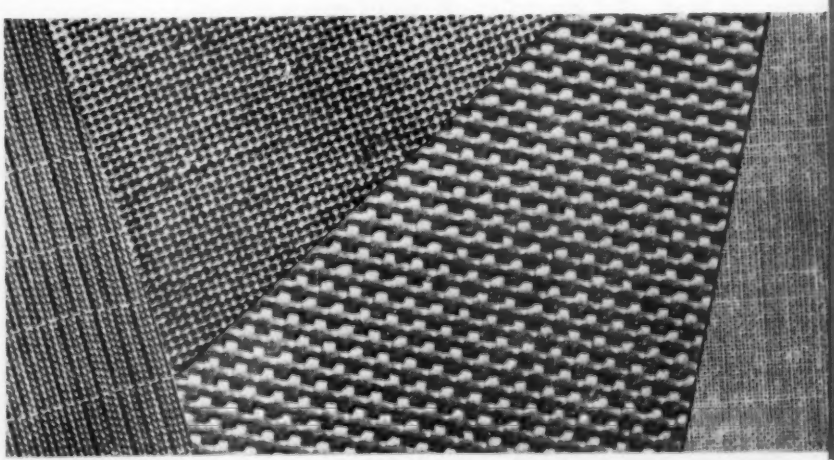

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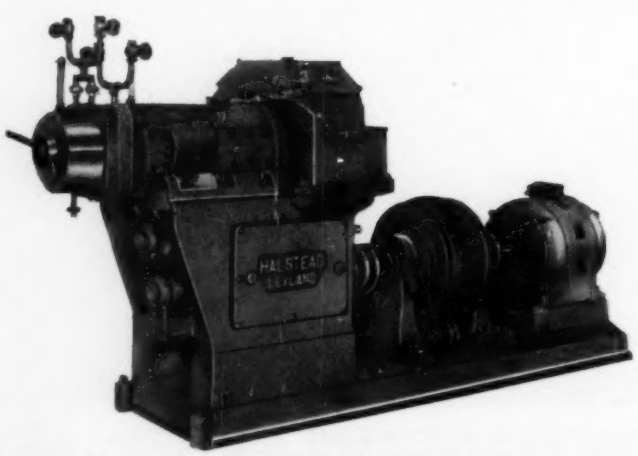

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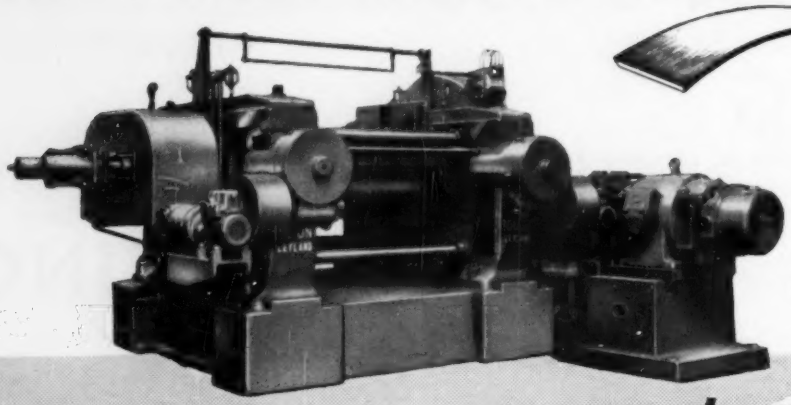

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Rubber Journal and International Plastics

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IN ITS 76th YEAR

January 2 1960

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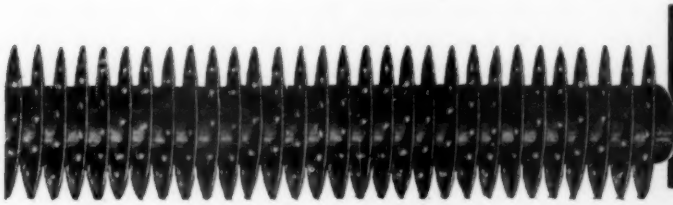

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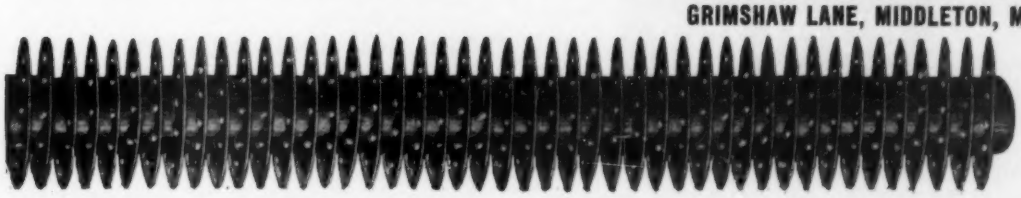

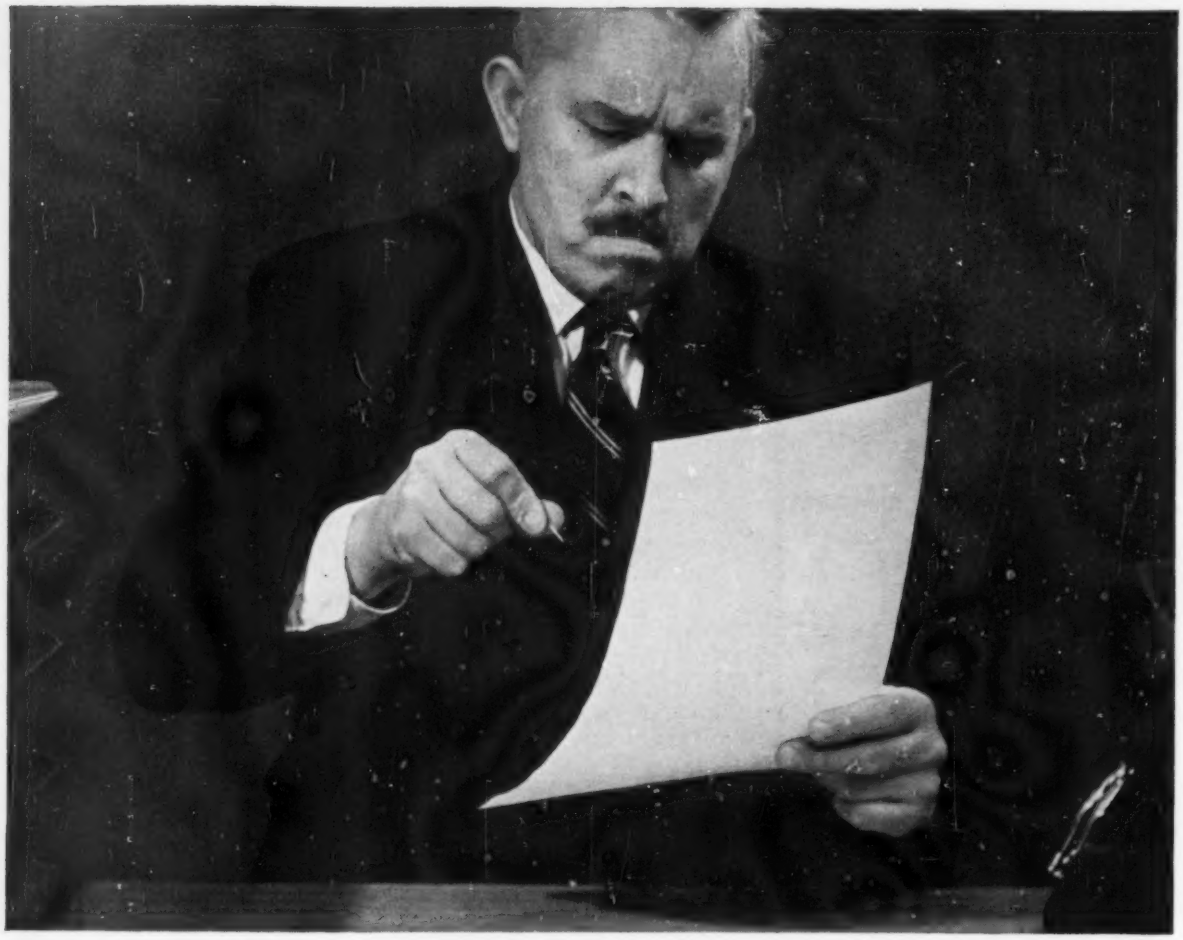

That's not the way, Mr. Pallsworthy!

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NOTES of the WEEK

British Exhibition

DETAILS of the British Exhibition to be held in New York this year (June 10-26), announced in the week before Christmas, made it appear that this will be an outstanding occasion. Anything less would indeed be spoiling the ship for the traditional ha'porth. The Government exhibit, which is to be the largest, is to use what are described as entirely new display techniques. These will emphasize Britain's position in the modern world and show that she is in the forefront of scientific and technological developments. There is also to be a display of some outstanding recent achievements in engineering and industrial processes, put on jointly by the organizers, British Overseas Fairs Ltd., and the Board of Trade. Prestige exhibits, arranged by such bodies as the B.B.C., the Royal Mint, the Iron and Steel Industry, will surround the display. The second floor of the exhibition building will feature a decorated area of more than 14,000 sq. ft. devoted to top quality British consumer goods, flanked by displays of furniture, china, glass, furnishing fabrics, carpets. Alongside will be electronic equipment and engineering products. The third floor will feature machinery and engineering products of all kinds of which most of the great names in British engineering, including a full 'Motor Show,' will be represented. The latter means that a fair amount of British rubber and plastics products will be on show along with the cars and commercial vehicles. Inevitably, as they are used in almost every industry, these products will be considerably in evidence in other exhibits including that of chemical engineering.

Hospitality

THE atmosphere of the 4th floor of the Colisium is to be quite different from the rest of the British Exhibition. Here, it is stated, there is to be an English Inn organized by the Brewers' Society and 'staffed in traditional way by English barmaids'. In passing, it is to be hoped that the traditional cry of 'Time, Gentlemen, please!' will be left at home. Our lunatic licensing laws should not be exported, even if we could find a market for them. Other features on this floor are to be shops, a grocery store, a garden and a cinema. The United States is admittedly the largest single market for British exports and it is therefore obviously an excellent thing to hold a British Exhibition on a really ambitious scale in New York. There are other markets of equal importance, or potentially so, and although the Board of Trade is responsible for UK participation in a number of international fairs, it seldom mounts, or participates in, an exhibition of the calibre of the New York event. It seems to us that if the British Exhibition as planned for New York became a travelling show, visiting especially the Common Market countries, and some of the Outer Seven, the expense involved would be money very well spent indeed. It is estimated that upwards of 500,000 people will visit the Exhibition in its 17 days in New York. When it is remembered that more than 300,000 people visited the Dusseldorf Plastics Exhibition during ten days last October, something of the potential value to British industry of a touring exhibition on such a scale can be realized.

Looking Ahead

AT the annual dinner of the Institution of the Rubber Industry (reported elsewhere in this issue), Professor Maurice Stacey had some sensible things to say about education and the need for looking ahead, above all in this field. Shortly, the Science Masters' Association will be presenting their new syllabus for the teaching of science in secondary schools. An editorial in a recent issue of *Engineering*, commenting on education and the increasingly important part which the teaching of science must play in it, put forward some facts which really brought home how far forward it is necessary to look when planning education schemes. If it is decided today that an important change is required in the syllabus of secondary schools, the *Engineering* editorial pointed out, it is first necessary to incorporate the change into the syllabus of universities and teacher training institutions. It will be 1970 before new books are written and printed and the effects of the change filter down to the level of secondary schools; and another ten years pass before the first generation of students matures. Four or five more years are spent at university, and another ten to fifteen years before members of the new generation exert their influence, before they produce an effective 'feed-back' of the ideas that originated 30 or 40 years before. A syllabus planned today will come into full effect only in the 21st century. From here, at the start of 1960, that is a powerfully sobering thought.

NEWS *Briefs*

NEW ITALIAN FILM—URUGUAY FREE IMPORTS
US RUBBER EXPAND — JAPANESE PRODUCTION
NETHERLANDS CELLULOSE—TYRE DEVELOPMENT

●**The Netherlands**—British Enka is to start production of transparent cellulose sheeting as this product is meeting increasing demand on the UK market. Announcing this recently the British Enka parent company, Algemene Kunstzijde Unis (AKU), said that it would make available its 30 years of experience in this field. AKU holds about 54% of the British Enka shares.

●**Sweden** — Vaernamo Gummifabrik which at present is employing a staff of 700 will take on another 300 workers early in January due to the increase in orders.

●**France** — Legal preparations have been concluded for the set up of the French branch of Firestone Tire and Rubber, the company announced in Paris last week. The French branch, with an initial capital of 1,000m. francs to be shortly stepped up to 2,000m. will be called Firestone France SA and build two plants in France, one for the production of tyres and the other to produce synthetic latex, copolymers of butadiene and styrene. Investments to this effect are estimated at $14m. The site of the plants, it is understood, is not fixed yet.

●**Italy** — A new transparent film, Montivel, which is impermeable to gases, has been developed by Montecatini. The film, resistant to a wide range of inorganic chemicals, is made from a polyethyleneglycol terephthalate compound, and is said to retain its flexibility over a range of temperatures of from −50°C. to +150°C. The film is said to have excellent electrical insulating properties; to be ideal for packaging and to have important potential uses in chemical engineering.

●**Portugal** — The text of the trade agreement signed with France to run till November 30 has now been released. On the list of quotas are a number of rubber manufactured goods, including conveyor belts, gloves and footwear.

●**Italy**—The Marley Tile Co. Ltd. is one of the controlling interests in a new plastics factory now being built at Trino Vercellese, near Vercelli. The new plant will manufacture thermoplastic materials for paving and thermoplastic tiles and accessories.

●**Japan**—Japan is expected to produce rubber articles totalling 212,000 tons and export rubber articles totalling 30,700 tons (both in terms of crude rubber) in 1960, according to the Japan Rubber Manufacturers' Association. The estimates represent an increase of 9.3% over the 1959 production of rubber articles which is expected to reach 194,000 tons. It is also 44.5% larger than 146,700 tons produced in 1958.

●**United States**—The Esso Standard Oil Company reported that it will increase the butyl rubber capacity of its Baton Rouge refinery by 38,000 long tons annually. The present capacity is 40,000 long tons. Of the new plant capacity 20,000 long tons will become available in mid-1960 and another 18,000 long tons in the second quarter of 1961.

●**Italy**—The Italian Foreign Trade Ministry announced on December 24 the quotas for trade exchanges between Italy and the Soviet Union in 1960. They include 10,000 tons of synthetic rubber to be delivered by Italy to the Soviet Union.

●**Uruguay**—A decree complementary to the new Monetary Law was published on December 23 authorizing the import free of surcharges and of customs bonds of a long list of raw materials and semi-manufactured essential goods. The list includes rubber and heavy chemicals.

●**United States**—The Firestone Tire and Rubber Company announces the development of a three-piece tyre mould which eliminates the seam line running through the tread of two-piece moulded tyres. The company claims that tyres made in the new mould will give a smoother, more vibration-free ride and provide better traction.

●**United States**—A 30% increase in the capacity of the Marvinol vinyl resin plant at Painesville, Ohio, of the Naugatuck chemical division, United States Rubber Co., will be achieved with the completion of a recently-initiated expansion programme. When the project is completed next July the plant will have an approximate capacity of 65,000,000lb. annually.

●**France**—The Paris Stock Exchange, the Paris Gold Market and all French commodity markets will convert quotations to 'New' francs on January 4 1960.

'If it's PVC beach balls and raincoats again — he's 'ad it!' — 465

This typical Mulroy effort arrived too late for inclusion in the December 26 issue which had to go to press early. We thought it too good to miss but hope the missile did

German Chemical Industry

PLASTICS PRODUCTION UP

THE annual turnover in West Germany's chemical industry is likely to exceed DM20,000m. for the first time this year, the German Association of the Chemical Industry reports. In the first ten months of this year turnover amounted to DM16,900m., an increase of 11.8% over the comparable period last year. In the whole of last year, it reached DM18,050m.

The number of people employed in the industry in the first ten months of this year rose by 19,000 to 439,000, the report said. The production in index of the industry (1938 equals 100) rose by more than 13% to 268 points in the first ten months of this year.

Plastics production alone rose by 30% in the first ten months of this year against the corresponding period of 1958. An annual production of 800,000 tons (643,000 tons last year) is expected for this year.

Exports during the first nine months of this year rose by 15.5% to DM3,930m. and imports increased by 18% to a record DM1,510m.

Imports of chemical manufactures and semi-manufactured goods rose by 21% in the first nine months of this year compared with the corresponding period of last year, while those of raw materials rose by 4% in the same period.

Russia Sells Rubber

Russia is to sell between 30,000 and 50,000 tons of rubber from its stockpile, stated an official of the Russian Trade Delegation in London on December 29. The sales are to take place in the first quarter of 1960.

Earlier in the week it was thought that sales would be made to China and countries in Eastern Europe; it now appears that they are to be made to consumers inside Russia.

The Russian official indicated that he was dissatisfied with the current price of rubber, and this was one of the reasons for the decision. At the time of going to press the above report which appeared in a London paper has not been confirmed from Moscow.

Synthetic Rubber

SOUTH AFRICAN PROJECT

THE Synthetic Rubber Development Company of South Africa (Pty.) Ltd., has been formed by the State-aided Industrial Development Corporation with the objects of investigating the production of synthetic rubber and, if proved economically feasible, of promoting the formation of an operating company. The initial capital is about £20,000.

Estimates made a year or two ago put the Union's requirement of synthetic rubber by 1960 as 20,000 long tons. It was then added that if the acetylene-benzene process was used, South Africa had unlimited supplies of raw materials; and that with an estimated cost of £5½m. for building a suitable plant and the cost of raw materials, the price of the locally produced synthetic should be approximately two-thirds that of US synthetic rubber.

Mr C. Musgrave of the Plastics Division, The Geigy Company Ltd., gave a paper on 'The Colouring of Rubber' to a joint meeting of the Scottish Sections of the Institution of the Rubber Industry and Plastics Institute at the Caledonian Hall, Edinburgh, on Tuesday, December 15 1959.

Dutch Firms Link

Vredestein Rubber, of The Hague, announced on December 28 an amalgamation with Radium Rubber of Maastricht, which has resulted in a concentration of the Dutch rubber processing industry. Vredestein has taken over all shares of the Maastricht factory. This merger will allow further rationalization and specialization to be made, the company said.

Plasticizer Price Down

The Distillers Co Ltd., Chemical Division, announces a price reduction of two of the sebacate plasticizers which took effect from January 1 1960. The reduction is approximately £3 per ton and typical new prices per ton for 10 ton lots delivered in road tankers are: Bisoflex DBS—£645, Bisoflex DOS—£626.

Text of the new trade agreement between France and Spain, which is valid up to October 30 1960, was released recently. Goods to be exchanged include plastic materials and equipment for the rubber and chemical industries.

Rubber Research Conference

MALAYA IN SEPTEMBER

AN International Conference on natural rubber research, sponsored by the Rubber Research Institute of Malaya with the support of the Government of the Federation of Malaya and the Rubber Producers' Council, will take place in Kuala Lumpur from September 26 to October 1 1960. The Conference will be held in two sections running concurrently—one for research on natural rubber production, the other for research on the preparation and use of natural rubber and latex.

Those submitting papers are asked to provide the title by February 1; an abstract of not more than 250 words by April 1, and the completed manuscript, in double-spaced typescript, by July 15. Papers may be contributed in English or French under any of the following subjects, provisionally grouped into sessions:

(a) Production: (i) Nutrition. (ii) Ground covers; weed control. (iii) Ecology; environment. (iv) Breeding and selection; vegetative propagation. (v) Tapping; yield stimulation. (vi) Pests and diseases.

(b) Chemistry of the Product: (i) Biochemistry of latex. (ii) Microbiology of latex. (iii) Chemistry and technology of dry rubber. (iv) Chemistry and technology of latex. (v) Factory practice and allied subjects.

Correspondence should be addressed to: Rubber Research Institute of Malaya, (Rubber Conference), P.O. Box 150, Kuala Lumpur, Malaya.

IRI Foundation Lecture

It has been announced by the IRI that the Council has accepted unanimously the recommendation of the Manchester Section Committee that the 15th Foundation Lecture should be delivered by Mr Maldwyn Jones, Development Director, Imperial Chemical Industries Ltd., Plastics Division. The lecture will be given in Manchester on May 20 1960.

IRI Annual Dinner

HANCOCK MEDAL PRESENTED

THE annual dinner of the Institution of the Rubber Industry was held at the Queen's Hotel, Birmingham, on Thursday December 17 1959. The chairman of the Council, Mr George Martin, B.Sc., F.I.R.I., was in the chair.

After the dinner, Sir John N. Dean, president of the IRI, presented the Hancock Medal to Mr J. H. Carrington.

The toast of 'The Institution of the Rubber Industry,' was proposed by Professor Maurice Stacey, F.R.S., who said he thought he had figured at their festive boards on a number of occasions, although not before had he been one of the 'big shots.' He had always likened the IRI to his own Institute of Chemistry. Their Institution stood to promote better understanding and closer relationship between all sides of the industry. He added, amid laughter, that meant to him as a professor of chemistry, that they sought to mix the engineers with the chemists. That was always difficult and the kind of reaction which they got could lead to all sorts of products. But he would like to touch on that blending of all sorts of people which went to make their great industry. Many of them, as he had found that evening, started as chemists and then moved on to other jobs, and he might say 'Another good chemist gone wrong.' But in looking at them all and noting their prosperous appearance, it looked as though they had taken the right turning and not the wrong one.

Moving Quickly

Professor Stacey went on to remark that things had changed since some of them had taken their examinations, whether they were of a professional kind or of an academic nature, because science and technology were moving so quickly that even professors found it extremely difficult to keep up, and unless their lieutenants kept them informed on nuclear magnetic resonance, light scatter or electron spin analysis, how on earth were they to keep up!

On the pressure of present-day life, he said that when one travelled around the world one saw something of the approach to modern science and technology of the Americans and the Russians, and more recently—last week—he had been able to see something of how the Germans and the Swiss were approaching that necessity for science and for technology. He could assure them that all over the world by their opposite numbers, not only at the higher levels of research, but right down into the schools, the subject was receiving the closest attention. He was alarmed in a way and a bit apprehensive for the future because their rivals, if they could call them that, were well aware of the fact that we were now in a technological age: they were well aware of the rewards which new discoveries and developments and applications could give. He was preaching at their own students all the time in the advanced levels to the effect that unless they got at it and strove and continued to strive, we were not going to keep up—at least we should not maintain the high state of prosperity we had at the moment.

He felt there was no lack of good raw material at the present time to make scientists and technologists for the rubber industry. They knew there had been a tremendous propaganda carried out one way and another throughout the country for the production of more and more scientists and technologists. As one moved around the schools one found that at A level the sixth forms had gone up in numbers from 80 to 100 and 120 in some cases in some of the big schools, and three-quarters of them were studying to be scientists and engineers. Those who dealt with them at the next stage sincerely hoped that there would be jobs for them. Now that propaganda had really got into the schools, the education authorities up and down the country had tried to meet it by building new schools and extending the present schools. The universities were responding. They were carrying a tremendous load. Many would know that he had had the pleasure of spending a million pounds on chemistry alone at Birmingham.

As he moved around he saw that the industry was expanding. It had a new look. He felt that as an extremely vast industry with many and wide ramifications, they should look very carefully at the kind of people they were to employ in the future.

He had noticed that most firms now-a-days were extremely sympathetic to young people in colleges and schools of technology, and in giving young persons time off to study. He said he wanted to emphasize the point he was trying to make. They had to watch the whole position of the supply of scientists very carefully in order that there should not be a lot of disappointed young men. He had no doubt whatsoever that the quality of the young people coming forward today was as high as it was in his day and the day of those who were in his age group.

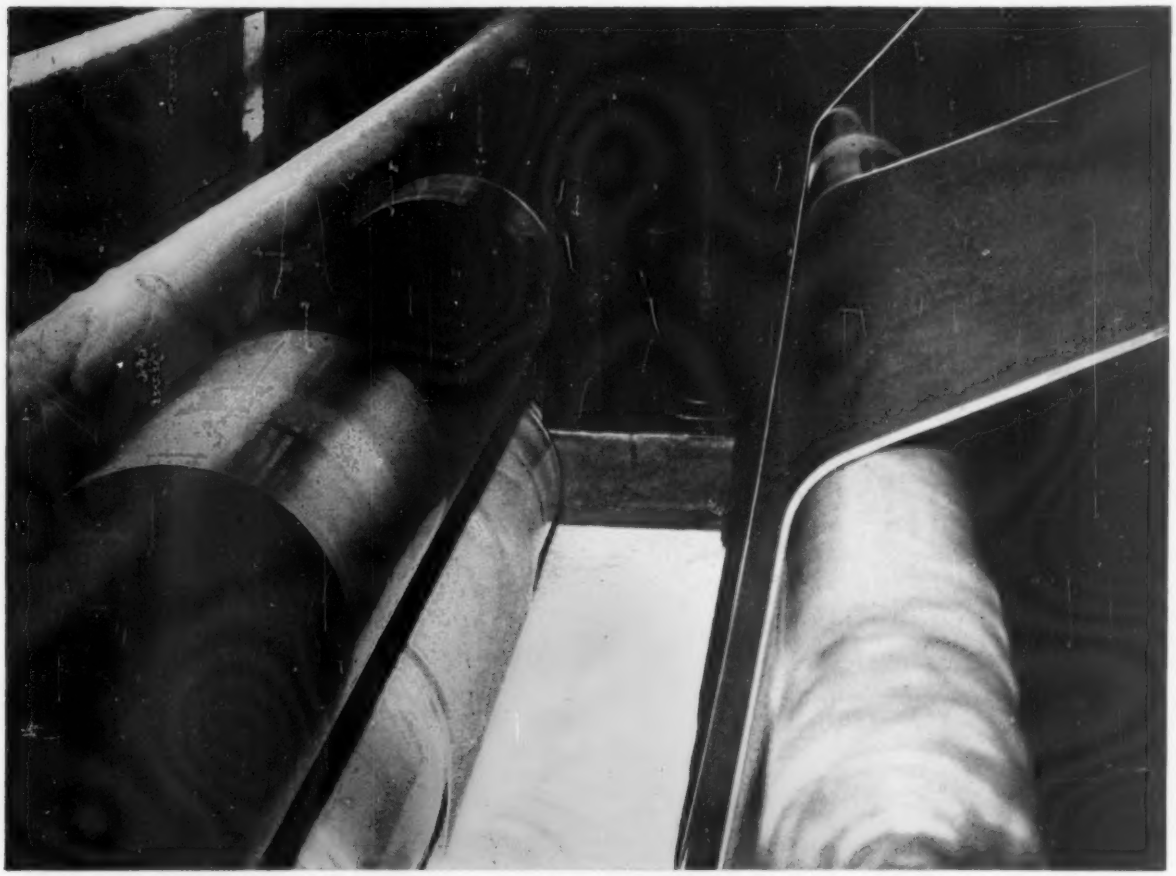
Joining Together

The IRI had as its object, he understood, the aim of joining them all together. One thing which had always impressed him was the excellent attendance at the dinners. These occasions brought them together and in bringing them together he supposed it was sometimes good for business. But, as an Institution, it was a focus and meeting place for many and he felt sure there was a great loyalty among them for the Institution.

After congratulating Mr Carrington on being awarded the Hancock Medal, Professor Stacey went on to say that the rubber industry would, he thought, in a few years be facing a little crisis in the sense that there would be a question as to what was to be their raw material. Were the chemists going to make everything in the future from coal, or petrol, or even sugar? He thought the chemists had a chance to prove in the days to come that sugar, the purest chemical on earth, might indeed provide some of the rubber for the future.

Their chairman was concerned with rubber trees. At Birmingham University, since he had mentioned them last, his rubber trees had grown ¼in. and they were taking from them not 1cc but 10cc of latex. He thought there was a great effort being made by the people who grew natural rubber and were proud of its great qualities, to produce it more cheaply in order to show the chemists who played with double bonds or even triple bonds, that the natural stuff would always be better than the synthetic. His prediction was that both would be used for many years to come by their rapidly expanding industry.

In his reply, Mr George Martin apologised for the unavoidable absence of the president, Sir John



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AT THE IRI DINNER

by Fred May

AT THE IRI DINNER

by Fred May

Dean. He went on to thank Professor Stacey for what he had said about the Institution, and for the words of advice which he had given them. Professor Stacey was an old friend of theirs and he had from time to time been to that function and had played an active part in the affairs of the Rubber Institution and of the rubber industry. They were always glad to have him with them.

If Professor Stacey in the course of his bio-chemical examination, said Mr Martin, would show them how to make synthetic rubber at half the price of natural rubber they might then make him a Fellow of the Institution. But he hoped he would not do that too quickly.

Mr Martin went on to mention some outstanding events which had occurred during the year.

First there were their relations with the Plastics Institute. They had now agreed with the Plastics Institute to hold a common examination for the Associateship Diploma, except that the Plastics Institute would hold an examination in plastics technology and they of the Rubber Institute would hold one in rubber technology. In addition they were going to have in 1960 further conversations with the Plastics Institute to see whether they could arrange even closer co-operation in other directions.

After outlining the development of new sections of the Institution throughout the world—South Africa, Southern Rhodesia, Ceylon and Southern Ireland—Mr Martin said that there was one outstanding event still to be mentioned. During the year the Council decided to institute a new award; it was an award of a very high character indeed and would be very rarely given; it was the award of a Life Vice-Presidentship. This year it would be given to someone who was one of their oldest friends: Dr Philip Schidrowitz. Mr Martin said he greatly regretted that Dr Schidrowitz was not present, but he asked them to rise and drink to the health of their first Life Vice-President.

Hancock Medallist

Mr Martin continued by saying that they now came to the main business of the evening, which was to honour their Hancock Medallist, Mr J. H. Carrington.

Mr Carrington, a Londoner, who came to Manchester 30 years ago to take up a post as chemist, was a generous and friendly man who had helped the Institution in all sorts of ways. Even the Articles of Association owed something to his critical eye. The Regulations bore John Carrington's mark in many directions. If their younger technologists were able to write better reports, and he thought they were all agreed on that, than they did in the old days, it was largely due to the efforts of John Carrington in the field of education and examination, and his analysis of examination results was an example to all people who held examinations. He was a charming and intelligent person, full of common sense and humour in a way which endeared him to all of them. Mr Martin then presented Mr Carrington with the Hancock Gold Medal.

In accepting the Medal Mr J. H. Carrington said he wished to express thanks in five ways. First to the chairman for his very kind words in making the presentation. Secondly to the BTR for the endowment of the fund that made the medal possible. Thirdly to the Council of the Institution through whose deliberations the Medal had been sent in his direction. Fourthly to the Anchor Chemical Co. Ltd., and he thought it was partly to them also, because they had provided the opportunity and the time to serve the industry and the Institution, and fifthly to his wife who had put up with many absences and hours of home work.

Early Days

Mr Carrington went on to outline his first contacts with the rubber industry and the work of Thomas Hancock. It was, he thought, appropriate that a Hancock Medallist should draw on Hancock's work for inspiration.

The early development of the rubber industry in this country, he said, was based on team-work between Hancock, the engineer and mechanic, and Mackintosh, a Scottish chemist of wide experience, and 20 years his senior. Such a fusion of interests, engineering and chemical, was an important pointer to the Institution in its work in the field of education and suggested that the present chemical bias might, with profit, be modified. It was Descartes who stressed that no one science (meaning field of knowledge) should be studied in isolation. There was a tendency these days to forget the difference between education and training for a job. The aim of our schools and colleges should be to cultivate a scientific way of thought and to teach a technical skill during the development of a broader culture; and in such a programme continuous instruction in the use of the essential means of communication —the English language written and spoken—was vital.

Anyone who made an error in addition, subtraction, multiplication or division was promptly corrected, or suffered for his mistake; but errors in grammar, syntax, spelling, and punctuation, and solecisms, appeared to be generally overlooked; overlooked in both senses—condoned and unnoticed. Whether that was the fault of their teachers, examiners or employers he left to them.

The Hancock Medal, concluded Mr Carrington, would remain one of his most treasured possessions and would remind him, he thought, of many worthwhile things attempted and, he hoped, achieved.

In proposing the toast of the guests, Mr W. D. Bradshaw, chairman of the Midland Section of the IRI, first welcomed the ladies. They were always pleased to see them. He welcomed also guests who were personal guests of individual members. He was sure that by their attendance engineering, education, research, chemistry, were all very well represented.

He went on to extend a very warm welcome to Mr G. A. Rawcliffe, chairman of the Midland Section of the Plastics Institute.

They had also very many well-known members of the Institute with them who were visitors to the Midlands: there was Mr L. D. Gill, chairman of the Leicester Section of the IRI; Mr J. Riddell, Polymer Corporation, and their good friend Dr W. F. Watson, director of the RABRM. He also associated with the toast the name of Professor Stacey.

In his response on behalf of the guests, Mr G. A. Rawcliffe said he had realized when he was asked to come as a guest that that was another gesture of friendliness towards the Plastics Institute.

They had heard of several common grounds between the Institution of the Rubber Industry and the Plastics Institute. The joint meetings and the proposals that they should consider other ways in which the two institutions could work together were receiving very serious consideration in the Plastics Institute. Speaking as chairman of the Birmingham Section of the PI, he said they would continue to run their own section, and the rubber people, he hoped, would also want to do the same sort of thing, because they had found in the Institute, just as they had found in the Institution, that there were so many different branches and subjects that they would have to deal with separate groups within the Institute. Where a large industry had a number of specialist groups it should be organized for the general good. That was the thing they should aim for.

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North British Rubber Expansion

NEW HOSE FACTORY OPENED

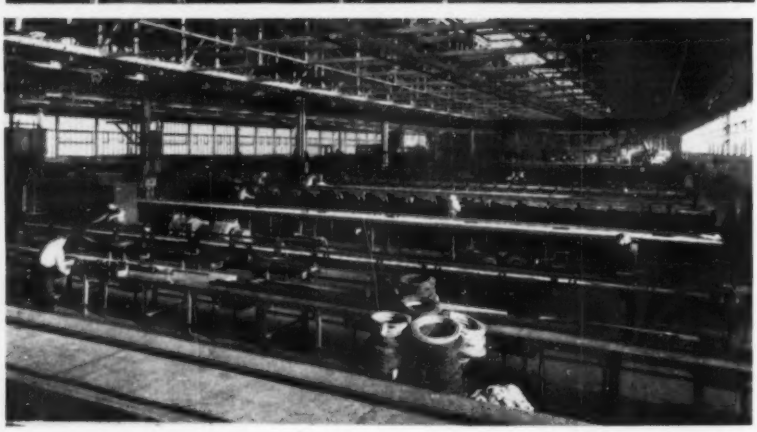
A MODERNIZATION plan which has taken three years to put into effect and which has involved the expenditure of approximately £3m., has recently been completed by the North British Rubber Co. Ltd. at its Castle Mills, Edinburgh. The programme has included the doubling of the capacity of the tyre plant, the erection of a new hose plant, modernization of facilities and the erection of a new central steam plant. The most interesting feature of the programme has been the new hose plant which has attracted a considerable amount of interest and is stated to be the most modern of its kind in Europe and possibly in the world.

Until three years ago the western end of Castle Mills, which has been the head office of the company since it was formed 103 years ago, was dominated by a 7-acre factory building with tower which had been a landmark of the area for almost a hundred years. This and some 60 smaller buildings were demolished to make way for the hose factory building, now complete and in production. With an eye to the future, however, provision has been made for a 50% expansion.

Hose has always been one of the main products of the company. In the past ten years they have made progress in the manufacture of giant oil hose, 90% of which is for export. The new factory layout (composed of two 70ft. bays each 600ft. in length) represents a straight line flow from rubber and fabric storage to calenders and extruders, fabric cutting, braiders, vulcanizers, inspection and despatch departments. The plant is completely serviced by a series of 60ft. wide overhead cranes. By means of the overhead cranes, which operate over the complete hose manufacturing area, operatives are not called upon to manhandle hose at any stage in its manufacture. Particular attention has been paid to hydraulic equipment for the testing of all heavy hose, an important factor in the case of oil and rotary drill hoses.

The new equipment has enabled North British to concentrate on braided hose, the main features of which are lightness and flexibility. Certain lines of wire braided hose required for hydraulic equipment, aircraft and motor fuelling, and high pressure greasing are made to withstand a pressure of 5,000—6,000lb. sq. in. The company has made a valuable contribution to Britain's exports in recent years through giant oil hose largely for tanker/quayside and submarine installations in the Middle and Far East, South America and the East Indies, also rotary drill hose for oilfields all over the world.

Many of the new hoses being manufactured in Edinburgh are made from synthetic rubber and are resistant to oils and chemicals. Much of the fabric and wire which are the main raw materials apart from rubber, comes from Scottish factories. The new plant enables the company to offer to industry a comprehensive range of hose — air, water, suction, steam, spray and chemical, oxy-acetylene, brewers, sand-blast, tar-spraying and fire-fighting.



Top, **On December 17 Lord Craigton, Minister of State for Scotland, paid a visit to the new hose factory. In the centre of this group is Mr Foster M. Stewart, managing director, with, on his left, Sir Ian A. Johnson-Gilbert, Lord Provost of Edinburgh, Mr D. Vallis, General Mechanicals Factory manager, Lord Craigton, Minister of State for Scotland, and Mr R. D. Hunt, deputy managing director.** *Below*, **A general view of the south bay of the new hose factory, occupying 7½ of the overall 22 acres. This shows the lathe armouring and making machines**

Tyres

During the period of modernization there has been considerable expansion in the Tyre Division. Capacity has been doubled and currently this production unit is making an all-out effort to meet an ever-increasing demand for quality tyres. Further expansion of tyre output is planned for 1960 and the years beyond.

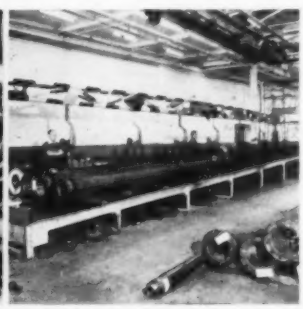
It is interesting to record that US Royal tyres made in Edinburgh are now standard equipment on Vauxhall and Ford cars and commercial vehicles and specified equipment on many other makes, including BMC, Standard, Rootes. Demand in the replacement tyre market has increased substantially as a result of owner experience through original equipment —indicative of the top quality built into these tyres by Scottish craftsmen. Many of the public transport fleets throughout Britain are fitted with US Royal tyres, including the City of Edinburgh transport and the Scottish Omnibus group.

The three existing boiler plants, one in each block, have been replaced

with a single new boilerhouse and engineroom of the most advanced design. This new plant has an initial capacity of 90,000lb. per hour with a completed capacity of 135,000lb. per hour.

In conjunction with the South East of Scotland Electricity Board a new 3.3kV sub-station of 20,000kVA capacity has been erected to provide 6.6 kV power by an underground distribution system to all parts of Castle Mills. The 6.6 kV is transformed to 3.3 kV for use on large motors of over 200 h.p. and down to 415 volts for smaller motors, lighting and other services.

Below the engineroom has been built a water storage reservoir of 250,000 gallons fed from the Union Canal. This water is used for cooling purposes only, returned to the reservoir for use again, with an additional amount returned to the Canal.



Left, **Mr D. F. Vallis, General Mechanicals Factory manager of The North British Rubber Co., pointing out a process in the manufacture of braided hose to Sir Ian A. Johnson-Gilbert, Lord Provost of Edinburgh, and Lord Craigton, Minister of State for Scotland, when they paid a visit recently to the new hose factory at Castle Mills.** *Right,* **Oil suction and discharge hose is an ever-increasing export of the company. The illustration shows the oil hose test area with hose being mounted on test tank ready for pressure and vacuum testing. Oil hose is tested to 250 lb. per sq. in. and some lengths weigh as much as one ton. Rotary drill hose, also a big export item, is tested up to 5,000 lb. per sq. in.**

FIBREGLASS LOWERS PRICES

Fibreglass Ltd. announce that as from early in the new year they will supply all their plastics reinforcement products in the low alkali glass composition, known to the industry as 'E' grade. From December 1 1959 the price of all 'E' grade Fibreglass reinforcing mats, rovings and chopped strands were substantially reduced.

Since 1954 the company have supplied their reinforcements in both 'E' glass, and the lower priced alkali-containing glass, known as 'A' glass, which was only recommended for the less critical duties where maximum strength and long term moisture and heat resistance are not required.

With the completion of considerable plant extensions at their Birkenhead factory by the end of this year, Fibreglass Ltd. will have the biggest output of reinforcement materials in Europe.

Polythene Price Cut

Imperial Chemical Industries have announced a reduction of 3d. a lb., to 2s. 3½d. for Alkathene, effective from December 22.

Institution of the Rubber Industry

At the 38th Annual General Meeting of the Institution held at the Queen's Hotel, Birmingham, on December 17 1959, the following appointments for the year 1959/60 were confirmed:

President: Sir John N. Dean, B.Sc., A.R.I.C., F.I.R.I.

Vice-Presidents: C. H. Birkitt, B.Sc., A.R.I.C., F.I.R.I.; T. J. Drakeley, C.B.E., D.Sc., Ph.D., F.R.I.C., F.I.R.I.; George Martin, B.Sc., F.I.R.I.; T. Martin, F.I.R.I.; H. Rogers, F.I.R.I.; J. R. Scott, M.Sc., Ph.D., F.Inst.P., F.R.I.C., F.I.R.I.

Hon. Treasurer: S. D. Sutton, F.R.I.C., F.I.R.I.

Election of ordinary members of the Council:

J. H. Carrington, B.Sc., F.R.I.C., F.I.R.I., W. C. Davey, Ph.D., M.Sc., F.R.I.C., F.I.R.I., M. M. Heywood, F.R.I.C., F.I.R.I., L. R. Mernagh, B.Sc., M.I.Mech.E., F.R.I.C., F.I.R.I., L. Mullins, Ph.D., B.Sc., F.Inst.P., F.I.R.I., F. M. Panzetta, M.B.E., M.I.Mech.E., M.J.Inst.E., F.I.R.I., L. R. Ridgway, Ph.D., M.Sc., A.R.I.C., F.I.R.I., W. E. Stafford, A.M.C.T., A.R.I.C., F.I.R.I., G. N. Welding, M.A., B.Sc., A.R.I.C., A.P.I., W. C. Wilkes, B.Sc.

Cressall Celebrate

Mr A. A. Cressall, managing director of the Cressall Tyre and Rubber Co. Ltd., of Byfleet, spoke of another prosperous and successful year for the company at their annual works Christmas dinner and dance at the 'Toby Jug,' Tolworth.

'I feel the outstanding event of the year,' he said, 'has been our break-in on the American market with our "Cressite" products. These products,' he said, 'have been exceptionally well received and production must again be stepped up to meet a larger demand.'

After talking about the cost of raw rubber, Mr Cressall said: 'It is true that artificial material is available at more steady prices, but for many products this material is not suitable.' He recalled that, while he was in Canada recently, he was impressed to see some American manufacturers advertising: buy so-and-so tyres made from tree-grown rubber. Looking back on nearly 50 years in the rubber trade, Mr Cressall remarked that during that time he had seen the price of rubber fluctuate from as low as 2½d. per lb. to as high as 12s. 6d., and added: 'We should perhaps be grateful that present price fluctuations are not so violent as they were.'

Mr Cressall then thanked all employees of the company for their 'splendid efforts during the past year.' He hoped that the exceptionally friendly relationship would continue for many years to come. After dinner the employees and guests enjoyed a cabaret.

Many people saw the New Year in with a double scotch from a plastic pack. The whisky was packaged for Bentalls by British Cellophane Ltd., in their 'Polycell' polythene-coated cellulose film

PVC Solves Expansion Problem

A METHOD of overcoming the expansion problem encountered when plastic pipe installations are subjected to temperature variations has been developed by Barflo Ltd., 56 Cavendish Place, Eastbourne, by the introduction of a device known as the Barflo expansion unit. The male end of the unit passes through an O-ring; this forms the main seal and allows telescopic action of the components contained in the cylinder. Auxiliary packing glands at each end of the cylinder enable repacking to be carried out, thereby prolonging the working life of the unit. The pipeline need not be interrupted when renewing the packing.

Expansion can be controlled over a movement of 2-12in. according to the size of the unit employed. Installed pipe runs of sizes from ⅜-6in. i.d. are possible. Special units can be constructed in sizes beyond the standard range in order to meet special requirements.

The expansion units are constructed from PVC piping made by Durapipe and Fittings Ltd., Winnock Road, West Drayton, Middlesex, using Geon RA. 170 High Impact PVC which is made by British Geon Ltd. This piping may be easily and accurately machined—a most important requirement in producing a precision unit such as this.

Made of Geon RA 170, this 'Barflo' expansion unit provides one method of controlling the expansion of plastic pipes subjected to temperature variations

Technical Publication Index

The fifth edition of the 'Subject Index to Dyestuffs Division Technical Publications' has been published by Imperial Chemical Industries Ltd.

The Index covers in its more than 100 pages the period January 1945 to December 1958 and includes publications relating to products and industries serviced by the Dyehouse Department and the Polymer and Chemicals Service Department.

The publication is a most valuable guide to the very considerable amount of literature covered, which ranges the alphabet from accelerators (rubber) to xylidines (mixed). It is interesting to note, as regards availability, that, in the majority of cases, editions can be had in French, German, Italian, Spanish, and Portuguese.

RUBBER TECHNICAL SERVICE

The Natural Rubber Bureau, in its bulletin for December, said it expects next year to establish on a modest scale a technical service on natural rubber to manufacturers in the US.

The Bureau also noted that the General Service Administration is faced with 'real problems in the disposal programme' of stockpile rubber. It said the volume manufacturers are interested primarily in the off-grade sheets and the browns and ambers to meet their requirements which means that the bulk of the stockpile rubber by the end of this year may be No. 1 RSS. This would mean that a heavy proportion of their disposal sales would have to be in No. 1 RSS, a very limited market. The Bureau added: 'Of course, if the ultimate objective is to end up with only No. 1 RSS and a small proportion of the No 1 pales in the stockpile, the disposal problem is eased considerably.'

Italian Rubber Stockpile Sale

1,150,000kg. of natural rubber have been put up for sale by tender by the Italian Ministry of Transport from the Italian Government stockpile. Offers for quantities not less than 10,000kg. had to be made to the Ministry before December 28. The rubber which is packed in bales and stored in Naples warehouses is part of the State stockpile which was previously managed by ARAR (Azienda Rilievo Alienazione Residuati—War Surplus Liquidation Board) which is now being wound up.

The present Government stocks of natural rubber amount to about 5,000 tons.

Union Carbide in Europe

TECHNICAL SERVICE PLASTICS LABORATORY

PLANS have been announced by Mr W. A. Woodcock, vice-president, Union Carbide International Company, for a technical service laboratory for plastics to be located in Geneva, Switzerland. Union Carbide International Company is the division of Union Carbide Corporation responsible for export sales and overseas interests. The laboratory will be an integral part of Union Carbide Europa S.A., an affiliate of Union Carbide Corporation, with headquarters in Geneva, Switzerland.

The laboratory will be devoted primarily to rendering technical service to the European plastics industry. It will develop and demonstrate technology and cultivate new end uses for polythene within the European market. It is also planned to co-operate with plastics machinery manufacturers towards expanding markets for polythene, and to associate closely with other Union Carbide laboratories around the world.

Mr D. Roberts, at present plant manager at Droitwich, has been appointed to the board of directors of Witco Chemical Co. Ltd.

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VIEWS and REVIEWS

Polyurethane Coatings

INDUSTRIAL and Engineering Chemistry for November 1959 has a most interesting Symposium on *Polyurethane Coatings* of which the following is a very short account. (*Vol. 51*, p. 1381.)

The Subject

Polyurethane Coatings made their appearance in 1955, 'looking for openings in the vast protective coating market. In 1959 estimates placed the sales of all kinds of polyurethane coatings at 600,000 gallons.' That is to say, over the past five years the production has almost tripled.

Use

What, shortly are the uses? The reply is given in a symposium on the subject, presented at the 135th National Meeting of the American Chemical Society, in Boston, April 5 to 10 1959. (*Note:* Our contemporary informs us that, by special arrangement, the complete articles will be published in the *Official Digest of the Federation of Paint and Varnish Clubs*, 1960.)

The applications briefly, are as follows:

Industrial Wire Coating
Metal Coating
Leather Coating
Coating of Rubber
Medical Uses.

I/EC informs us that in each of these applications, the coatings serve a definite purpose, that is to say they 'upgrade the use of the material coated and improve durability to wear.'

Medical applications are recent. Here the polyurethanes replace the phenolic types that had been used on catheters. The important point is that they withstand repeated autoclaving without loss of flexibility. Here are some of the trade maintenance applications in which polyurethanes have found good use:

Metals coating—copper, aluminium, steel, magnesium.
Vehicles coating—tank trucks and tank cars.
Marine coatings—enamels, paints, and varnishes.
Plastics coatings—vinyl, styrene; and Malar Concrete—swimming pools, commercial and private.

There are two fronts of attack: 'A' to make better coatings regardless of costs, and 'B,' to make low-cost coatings without sacrificing existing properties.

As regards the future, *inter alia*, they are looking for primer coats for motor cars; household appliances, and asphalt-urethane coatings—displacing coal tar derivatives for sealing operations. Our contemporary concludes the introductory section with these words: 'When a product shows as much as do polyurethane coatings it bears much watching. And I/EC's editors will be as eager to follow their progress as we think you will.'

In the following are a few notes on the various systems tried out. From these readers will gather no more than the general trend, but I hope they will be of sufficient interest to attract the attention of potential users who may wish to read the original articles.

'Statistical Studies on One-Package Polyurethane Packages' was the title of the first paper in the Symposium. It was by S. N. Glasbrenner (Armstrong Cork Co., Lancaster, Pa.), and by Brage Golding and L. C. Case (School of Chemical Engineering, Purdue University, Lafayette, Ind.). It should be explained that as part of a continuing research programme on coating at Purdue, statistical studies were made on idealized polyurethane systems to evaluate the effects of formulation changes on film properties.

In the preliminary investigation (now reported on) four formulations having potential value as polyurethane coatings were examined. These were: (1) *Two-Package System;* (2) *Molecular-Sieve Cured System;* (3) *Air-Moisture Cured System; and* (4) *Isocyanate-Adduct System.* Because of inconvenience or of poor results systems 1 and 2 were not examined further at this stage of the studies.

Systems 3 and 4 were examined further, and it is desirable for those interested to read the original. One result of 3 was that 'All samples of this system were tough, and could be sharply flexed on metals with no apparent damage,' and of 4 'All films of this system could be sharply flexed on metal panels without danger.'

On the other hand, it was theoretically calculated that gelation should not have occurred in any of the systems used. As gelation did occur (*cf.* figs. in original), it appears that undesirable reactions were taking place. The most probable causes . . . are adventitious impurities including water.

The next series is *Baked Polyurea Coatings* by G. A. Hudson, J. C. Hixenbaugh, E. R. Wells, J. H. Saunders, and E. E. Hardy (Mobay Chemical Co., New Martinsville). The polyurea coatings it is noted should find a use as industrial primers or as protective coatings.

The following paper in the symposium was on *Urethane Coatings from Castor Polyols* by T. C. Patton and H. M. Metz (Baker Castor Oil Co., Bayonne), and the succeeding one on *Diisocyanate Coatings Based on Castor Oil,* by G. C. Toone and G. S. Wooster (National Aniline Division Allied Chemical Co., Buffalo), and this was succeeeded by *Reactions of Isocyanates with Drying oils,* by Guy Wilson and J. M. Stanton (Cargill Inc., 200 Grain Exchange, Minneapolis 15).

The paper on *Polyether Polyols in Urethane Coatings* by A. Damusis, J. M. McClellan, Jr., and K. C. Fwisch (Wyandotte Chemicals Corpn., Wyandotte) stresses the fact that most of the published urethane coatings information relates to polyester or castor oil-diisocyanate technology, with relatively few references to polyether urethanes. The authors have made a more complete investigation on polyether polyol diisocyanate coatings. The present research covers nearly 2 pages of I/EC. I can do no more than refer to this, as it seems to me, important paper, and trust that those interested will peruse the original, or the I/EC report.

The last paper in the symposium is on *Stable Pigmented Coatings Systems* by R. A. Bienaman, E. J. Baldin, and M. K. Markoff (Sencer Kellogg and Sons, Inc., Buffalo 5, N.Y.), also an important subject.

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **DR SCHIDROWITZ**

Surface Chemistry and Adhesion

There are several important papers in the *Transactions* of the *Institution of the Rubber Industry* of October 1959 (Vol. 35, No. 5) to which reference should be made, but I must confine myself to one of these, in this issue of 'Views and Reviews' with the hope that I may have space for the remaining papers on another occasion.

Dr Wake's (RABRM) paper was read at a Joint Conference of the London Section of the IRI and the Plastics Institute held in the William Beveridge Hall, of the University of London, on April 17 1959, and was on: 'Surface Chemistry and Adhesion of Polymers.'

Dr Wake gives us a very brief summary, but I think that a quotation from his Conclusion gives us the best idea of his thoughts:

'The general position may be summarized in the following way. Most adhesion is specific adhesion independent of the form of the surface. The theoretical strength which can be calculated from this starting point is never realized and part of the reason is the existence of stress concentrations and the imperfections in contact of surface to surface. The interface between two substances consists most probably of oriented molecules, or molecular groups, at least at one side of the interface. The free surface energy is the natural scientific way of measuring the adhesive potentialities of a surface and a surface can be found, varying from a few ergs/cm.^{2}, as for example, molten sodium silicate on graphite, a score or so ergs/cm.^{2}, as with PTFE, polythene and similar plastics, right up to several thousand for some metal combinations. Free surface energies of solids are however somewhat difficult to arrive at, experimentally or theoretically, but until this problem has been solved, it is to be doubted if the thermodynamic approach will result in much practical advance. The problem of adhesion to textiles is unique in being so strongly dependent on a purely mechanical element. It is none the less important or interesting for that.'

Note: The paper is followed by an Appendix on 'Measurement of the Surface Areas of Fabrics' based on work by R. S. Khot and (the late) S. P. Gundavda. The methods were developed by RABRM for use in estimating surface areas of fabrics, and measuring the surface covered by rubber when the latter was applied by spreading or calendering. This runs to some six pages.

Degradation of Rubber on Hot Mastication

Part 9 of the series on 'Mastication' is on the 'Sheer-Dependence of Degradation on Hot Mastication,' the authors being L. Mullins and W. F. Watson* (BRPRA). The paper was published originally in the *Journal of Applied Polymer Science* (Vol. 1, pp. 245-249, 1959 and is reprinted as BRPRA Publication No. 319).

Natural rubber was degraded by hot (140°C.) and cold (55°C.) mastication, and by heating in thin films at 130°C. and 140°C.

A comparison between the viscosity-molecular weight relationships for natural rubber degraded in thin films at 130° and 140°C. and on cold and hot mastication indicates a greater similarity of distribution on degradation by the mastication treatments. The hot mastication process is further differentiated from ordinary thermal reactions by the dependence of rate of degradation on the rate of sheer. It does, however, differ from cold mastication in being primarily an oxidative-scission reaction. No differences were detected in the properties of networks prepared from rubbers masticated at high or low temperatures to the same level of degradation.

*Now with the RABRM.

Stress Waves and Fracture Surfaces

A paper by E. H. Andrews (BRPRA) reprinted from *Journal of Applied Physics*, Vol. 30, No. 5, 740—743, May 1959 Copyright 1959 by the American Institute of Physics, Printed in USA, represents Publication No. 320 of the British Rubber Producers' Research Association. The gist of the paper is as follows:

Surface markings observed in the brittle fracture of certain frozen rubbers display striking wave-like characteristics. They have been identified as 'Wallner' lines, caused by the interaction of the fracture front with stress waves emanating from the region of the fracture front itself. These oscillations are possibly caused by the supply of excess energy to the fracture tip.

A value of approximately 1:2 is obtained for the ratio of fracture velocity to wave velocity.

Notes

Readers may have noted in 'Views and Reviews' of December 26 the last three lines in paragraph three from end of the article on 'Continuous Manufacture of Rubber Tubing,' which read:

'Nevertheless, it has not been found possible, or without serious difficulties being encountered, to produce continuously hollow articles.'

This sentence is obviously out-of-context, and was written regarding some of the earlier apparatus. It may seem to some readers as criticizing the final lay-out of the author's plant, which it certainly was not intended to be.

I can think of no better way of expressing my annoyance than by quoting the *Conclusions*, as given by the Translator (not previously given here) of the author's work:

'1. The continuous vulcanization of extruded rubber articles in air without using pressure has been described.

'2. A new recipe for rubber tubing, as well as a process and equipment for the continuous manufacture of extruded articles has been worked out. These allow the duration of vulcanization at a temperature of 200°C. to be reduced to 2-3 minutes.

'Non-porous rubbers can be obtained when vulcanizing without pressure, by introducing ground lime into the rubber stock and extruding articles at 100°-110°. The vacuuming of the rubber stock seems advisable.'

(3. Re the best accelerators to use when employing butadiene-styrene.)

'4. By introducing continuous action equipment into industry the manufacture of extruded articles could be intensified and large amounts of raw material and other ingredients saved, power consumption cut, and the general level of production raised.'

PHILIP SCHIDROWITZ

Questions Corner—98

(Second Series)

411. Give some details regarding the process known as pulp moulding.

412. Give brief details of the chemical reactivity of polyvinyl alcohol.

413. To what is attributed undercuring of polyester resins?

414. Give brief details of a method suitable for coating the inside of pipes with a protective coating.

(Answers next week)

Answers to Questions Corner—97

407. There are several methods of determining the low temperature brittleness of plastics but in this connexion we limit ourselves to the temperature at which a standard test piece becomes sufficiently brittle to break when subjected to a sudden blow.

One method is that of ASTM Spec. D746-55T which establishes the temperature at which one half of the tested specimens fail when subjected to a standardized blow inside a Tinius Olsen brittleness tester. In this instrument, the test temperatures are rigidly controlled to within a fraction of a degree by means of coolants such as dry ice and liquid nitrogen. The test pieces are held firmly in clamps and mounted as cantilever beams, they are subject to impact blows by a striking edge moving at a speed of 6-7ft./sec. After each impact blow the specimens are inspected for cracks or breaks.

The test pieces are die punched from compression moulded plates and are thus practically free from stresses. This, of course, is not fully representative of processed plastic articles and internal stresses can raise the effective brittleness temperature by many degrees. Nevertheless, the test is of comparative value in assessing the relative merits of different formulations, resins, etc.

A Scott Model E Brittleness Apparatus is also suitable for brittleness tests. There are two types of solenoid-actuated and one type of motor-driven tester.

408. Polythene is highly resistant to most chemicals and solvents in the absence of stresses but many polythenes may crack when exposed to the same chemical environment under polyaxial stress, that is to say, while being stretched or bent in several directions at the same time. Thus, under unfavourable conditions, various oils or household cleaning agents may cause a polythene bag, pipe or bowl to split after a short period.

One test is known as 'the bent-strip' test (Ind. Eng. Chem. 1951, *43*, 117) and Igepal is used as the standard reagent. The test is carried out on moulded specimens ¼in. thick by ½in. wide and 1½in. long. The specimens are first heated in boiling water to relax any 'frozen-in' stresses. A surface cut of specified length and depth is then made on the sample, parallel to the long axis, with a mounted razor blade. The specimens are then stressed by bending them 180°, lining them in a rack, and placing them in a tube containing the reagent. Thus, a situation of polyaxial stresses in an adverse environment is simulated.

To accelerate the effect of the cracking agent, the tube is placed in a bath at a temperature of 50°C. At short intervals the specimens are inspected for visual cracks perpendicular to the cuts. The number of failings is recorded.

A sample is considered to have failed when one half of them show cracks perpendicular to the cuts, and the time when this occurs is recorded.

Failure due to environmental stress cracking may be attributed to 'stored' stresses acquired in the moulding or extrusion operations.

409. The most popular resins for bonding abrasive grits such as silicon carbide and aluminium oxide, are the phenolics, which may be modified for special applications with polyvinyl butyrals, acetate and chlorides. Alkyds, shellac, furfural and natural or synthetic rubbers are also used.

In the case of phenolics one-step resins are normally used where impregnation of a fabric is involved. A two-step powdered type of resin is used when an abrasive is required. In this case the abrasive is wetted with a liquid resin, the powdered resin and filler are then added to the wet abrasive in a mixer, until a free-flowing mix is obtained, in which the abrasive particles are coated with the resin as filler. The mixture is then poured into a mould and hot pressed. The product may include layers of fabric for reinforcement. Subsequent baking ensures a longer life.

Phenolic resins used in reinforced abrasive wheels are ground to pass 200 mesh, but varies with the type of product required. Among the fillers that may be used are carbonates, pyrites and cryolite.

Generally, the higher the abrasive content the faster the cut. The higher the density the longer the life.

410. Polyester film is very strong, with good chemical resistance and electrical properties. This gives a clue to its possible applications.

Apart from the use of thin films for packaging it can be laminated to a wide variety of materials but the problem of shrinkage needs careful works technique.

Sound-recording magnetic tapes were one of the major early uses where resistance to moisture, temperature, good tear strength are of advantage. Also, compared with conventional thermoplastic materials the polyester film can be produced in very thin gauges which permits a greater length of tape to be wound on a given size reel. Polyester magnetic base tape is used for electrical computers and telemetering.

There are a number of electrical applications for capacitors and between coil insulations on very small hp motors with quite an appreciable reduction in size being possible.

One other possibility for the use of polyester film is the result of its affinity for metallization and printability. Attractive, strong, moisture-proof packaging, laminates for radio and television sets and accessories for motor cars, etc.

(More questions next week)

Boat Show

Dunlop have introduced a new type of underwater swim suit which is being demonstrated at the National Boat Show now on at Earls Court. It is a two piece 'Wet' suit made from foam Neoprene rubber with detachable hood and boots. Double skinned, it lets in a certain amount of water which is almost immediately warmed to body temperature and acts as an extra insulation against cold. The main advantage is its great comfort at depth, where it acts almost as a second skin. Made in a variety of colours the new suit is expected to retail at around £15.

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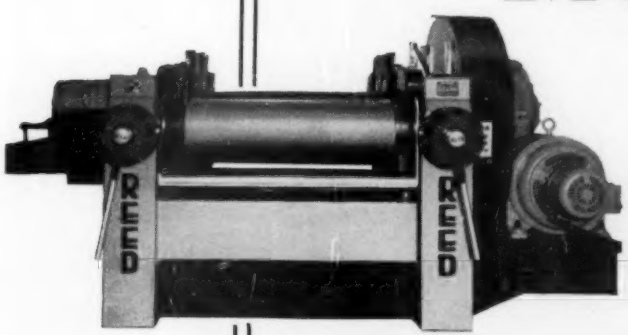

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MEN *and* MATTERS

A Review of People and Events

by George A. Greenwood

THIS is the second day of the New Year and therefore an appropriate moment to wish you all a very happy and prosperous 1960, assuming that the wishes for Christmas were fulfilled, and that you had a joyous season. If it was the thing to do last week to take a retrospective view, it is fitting that this week we should look out in prospect and, just as there can be nothing greatly to complain about so far as 1959 is concerned, there is every reason, I should say, to look with confidence upon 1960.

It will be recalled that in the spring of last year the International Rubber Study Group's management committee estimated that the world would consume something a little over 3,500,000 long tons of both natural and synthetic, apart from synthetics produced in non-member countries. As for 1960, the pundits believe that before this is very much under way, there will be still shorter supply, and this applies particularly to synthetics. As for plastics, the significant fact—shared with rubber—is that world needs and requirements just go on growing. The reports of the great producing companies, and the state of the industrial and domestic markets, likewise make it quite clear that we are nowhere near the end of inventive ingenuity in the application of plastics to human needs. But it still remains a fact that as far as the UK is concerned a good deal of this prosperity will depend upon its capacity, not only to maintain, but actually to increase, exports, especially to Europe.

It is for this reason, as I have myself discovered in talks with some of the leading men in the industry, that there is no let-up in their anxieties over the future relations between, and the operations of, the Common Market and the Outer Seven. It is true that the OEEC and the USA are hoping, and in fact attempting, to do something about this, but a good deal of negotiation and give-and-take will have to take place before mutual ground is reached.

Christmas Card

Almost like a Christmas card came at the weekend a copy of the latest issue of the *BBA Journal*, issued by British Belting and Asbestos Ltd., so well known in rubber especially, whose headquarters are at Cleckheaton in Yorkshire. Indeed, it is marked 'Christmas 1959' and on the front inside cover is a seasonable message from the chairman, Colonel Sir William C. Fenton.

This house organ contrives to give an extraordinary amount of information about the doings of the company and its staff and workers from practically every point of view. There

PICTURES FROM WIESBADEN

The International Macromolecular Symposium, held in October last in Wiesbaden (*RJIP* November 14, p. 596) attracted a record attendance. Among those present were: 1, Dr G. Natta (Instituto di Chimica Industriale del Politecnico, Milan). 2 (*left*) Dr W. F. Watson (RABRM). 3. Professor V. A. Kargin (USSR Academy of Sciences) and some of his staff. 4 (*left*) Professor Staudinger and (*right*) Dr Huthig (Huthig Verlag). 5. Dr B. Rau (Verb and Kunststoffe Erzeugende Industrie) and Dr Schmidt (Wirtschaftsverband der Deutscher Kautschukindustrie). 6. Professor S. S. Medvediev (USSR Academy of Sciences) and Professor M. Kosolapoff (Auburn, USA)

is, for example, a most absorbing account of the testing of BMC models, now known as Austin 7, Austin A 55 and Austin A 99, with which the company was much concerned.

Blewis and Shaw Appointment

D. R. CRABTREE

The Shell Chemical Co. Ltd. has announced the resignation of Mr David R. Crabtree as from December 31. He has been appointed assistant to the managing director of Blewis and Shaw (Plastics) Ltd. of Canbury Works, Lower Ham Road, Kingston-on-Thames, Surrey, the plastics packaging specialists. Mr Crabtree commenced his plastics career in 1942 when he joined the laboratory staff of Erinoid Ltd. at Stroud. After war service he returned to that company on the sales staff. In 1953 he transferred to the Erinoid / Petrochemicals subsidiary, Styrene Products Ltd., as technical service manager, and continued this work after that company was acquired by the Shell Chemical Co. Ltd. in 1956.

During his plastics career, Mr Crabtree has carried out technical service and sales promotion work in France, Portugal, Denmark, Holland, Finland, India, Australia and South Africa. He is a member of the Institute of Packaging.

Exhilaration

But for sheer exhilaration and excitement I commend the article from Mr M. Popplewell, a chief executive, and one of the established correspondents of the 'Journal.' He explains that he was told 'to go to Canada and the United States! Go when you like for about four or five weeks, make your own arrangements, come back and tell us what you think about it all.'

Well, Mr Popplewell did, and the result is an absorbing contribution headed 'Going West.' I cannot hope to convey in a mere few lines how he describes the company's impressive and progressive developments on 'the other side,' but all he says just goes to show BBA's great ramifications in North America.

Rubber Regenerating

In a note on December 19 on the fact that this year sees the Golden Jubilee of the foundation of the Rubber Regenerating Co. Ltd., Manchester, I mentioned something of the extensions and steady advance of the company through the years. In case I may have been rather ambiguous, I should like to make it clear that the most recent expansion referred to, that which boosted reclaim output by 20%, was, in fact, commenced and completed in 1958. In other words, what I described as a 'high target' was actually achieved just over a year ago.

Phoenix Man for Bahrein

Mr Walter Francis who lives—oddly enough—in Francis Avenue, Ilford, Essex, believes that he is the most widely travelled layer of plastic floors in the country. Already he has been to seven Continental countries for his firm—the Phoenix Rubber Co. Ltd., Slough, Bucks.

On January 22 he is off again—this time by air to Bahrein in the Persian Gulf to supervise the laying of specialized Phenco flooring in the Awali Hospital, which is owned by the Bahrein Petroleum Co. Ltd. During his three-weeks stay, 36-year-old Mr Francis will almost certainly see no rain because out there the average for January and February is about a quarter of an inch a month. He will live in a prefabricated town on an island 30 miles by 10 where most of the 6,000 Europeans are employed in oil and where, in the summer, the temperature climbs up into the 120s.

Dunlop Changes

A reorganization has recently taken place in the Dunlop public relations department headed by Mr J. Campbell Fraser. Mr A. J. H. Woodgates

A. WOODGATES

J. CULLIS

becomes responsible for Press relations with the title of Information Officer; and Mr John Cullis, Press officer for the past two years, takes over control of institutional advertising and film production.

IRI Golfing Society

The annual dinner of the London Section of the IRI Golfing Society was held in London on December 18. An account of the occasion, with drawings by Fred May, will appear in *RJIP* for January 9.

Amongst those present at the recent annual dinner and dance of the Leicester Section, IRI, were: *top*, **C. H. Saunders and Mrs Saunders, G. Martin, and Dr and Mrs K. O. Lee.** *below*, **W. Ryding, Mrs R. McEwan, P. Swire, Mrs W. H. Swire and Mr W. H. Swire, Mrs H. Schofield and Mr H. Schofield** (*Leicester Evening Mail photographs*)

Export Opportunities

Plastics and Linoleum for Transvaal

A first class company in the Transvaal with good connexions with public works departments, would like to obtain the agency or distribution rights for UK manufacturers of plastics wall coverings of any type (excluding tiles) and also for 1mm. linoleum wall claddings. They claim to offer effective coverage for the whole of the Transvaal.

Manufacturers interested should write direct to the UK Trade Commissioner, PO Box 1982, Kerry Building, 238 Vermeulen Street, Pretoria, for onward transmission to the enquirer. B.o.T. ref.: ESB/29340/59.

Methyl Acetate, Butyl Acetate, Zinc Oxide and Reclaimed Rubber for Syria

Mr Rizkallah C. Bendki, BP 66, Aleppo, has said that he wishes to establish business relations with UK manufacturers, on the basis of exclusive agency for Syria for the following products:

5,000kg. methyl acetate in galvanized iron drums of 200kg. 5,000kg. butyl acetate in galvanized iron drums of 200kg. Zinc oxide, red seal, in paper bags of 50kg. Reclaimed rubber, black, red, white, etc., in bales of 100kg.

All these products are for the manufacture of footwear of rubber, etc. Manufacturers interested should write by air mail direct to Mr Rizkallah C. Bendki, including samples and quoting prices cif Lattakia, Syria, UAR, including his 5% commission. They should notify the Commercial Secretariat, British Embassy, Rue Phenicie, Beirut, Lebanon, that they have done so. The matter should be treated as urgent. Board of Trade reference No. ESB/27973/59.

Polystyrene Balls for USA

The David R. Grossman Company, 155E. 42nd Street, New York 17, N.Y., have informed the British Consulate-General at New York that they would like to receive offers from UK suppliers of clear (natural colour) polystyrene balls of the type now being used in the cosmetics industry for roll-on applications. The balls should be .725in. to .728in. in diameter, with out-of-spherical tolerance .003in., and with a minimum of air bubbles—in any event, no bubbles should be within $\frac{1}{8}$in. of the surface. Chemicals equivalent to Koppers Co., 'Dylene No. 8,' or Dow Chemical's HR 683 or HR 700 would be acceptable.

Suppliers interested should write by air mail direct to the New York company with about twenty sample balls, and notify the British Consulate-General, 7th Floor, 99 Park Avenue, New York 16, N.Y., that they have done so. It is important that quotations should show both (1) fob and (2) cif New York prices in US dollars. If US import duty is known, this should also be stated. Board of Trade reference No. ESB/28587/59.

Plastic Ponchos for Rhodesia and Nyasaland

2,200 waterproof plastics Ponchos, black, are required for road gang use; manufactured from 100% cotton waterproof plastics. Tenderers must submit a non-chargeable sample of Poncho offered direct to The Controller, Government Central Stores, P.O. Box 8096, Causeway, not later than seven days after closing date.

The address to which bids should be sent is: The Secretary, Federal Tender Board, P.O. Box 8075, Causeway, Rhodesia and Nyasaland (quote GCS 62). Closing date is January 8 1960.

A copy of the tender documents may be inspected in Room 620 at Export Services Branch until December 21, after which date it will be available on loan. Board of Trade reference No.: ESB/29172/59.

The address of the Export Services Branch of the Board of Trade is Lacon House, Theobalds Road, London, W.C.1. Telephone number: Chancery 4411, extensions 776 or 866.

Companies in the News

Rubber Improvement Ltd.

Pressure for a Board of Trade inquiry into the affairs of Rubber Improvement Ltd. does not appear to have been put off by chairman Mr John Lewis's remarks at the meeting on December 29. Referring to the dividend position, Mr Lewis pointed out that, taking into account the present year when it had not been possible to recommend any distribution, the average distribution for the past four years had been 56%. The report and accounts were adopted without dissent.

Mr E. E. Lambert, who circularized shareholders for support, implied that he intends to go through with his application for an inquiry.

Arlington Plastics (Exports) Ltd.

At an extraordinary general meeting of Arlington Plastics (Export) Ltd. held at Harlow, Essex, on November 30 1959, a special resolution was taken to wind-up the company voluntarily.

Distillers Co. Ltd.

The Distillers Co. Ltd. reports that the trading profit of the group for the half-year ended September 30 1959, after charging depreciation, is estimated at £14,686,000, compared with £12,841,000 for the corresponding period last year. Income from trade investments amounted to £430,000 (£738,000) and after charging interest on debenture and loan stocks of £335,000 (£354,000) and eliminating the interests of outside shareholders £269,000 (£193,000), the net profit before taxation attributable to the company is £14,512,000, compared with £13,032,000.

So far during the second half of the current year, the trading results continue favourable, but the fact that Scotch whisky is now more freely available has undoubtedly influenced the seasonal pattern of demand in the home market, and makes the present position more difficult of accurate assessment. It is, however, confidently expected that the year's results will be satisfactory.

The Board have declared an interim dividend on the ordinary capital for the year ending March 31 1960 at the rate of 5% (4% equivalent) less income tax at the rate of 7s. 9d. per £, payable on February 26 1960, to shareholders on the register at December 10 1959. This increase in the interim dividend implements the proposal in the Chairman's statement accompanying the last annual accounts.

British Standards

BS for Rubber Sheet (Hospitals)

This revised standard provides for rubber proofed bed sheeting containing a lower percentage of rubber than that specified in the 1954 edition of BS 2508. Tests show that this type of sheeting is entirely suitable for hospital purposes.

The 9 pp. publication gives requirements for fabric, proofing and testing for three types of sheeting. Colour is specified; and a marking clause gives conditions under which BSI's 'Kite mark' monogram may be used on the product. An appendix contains a set of useful recommendations on the storage of this type of sheeting. Copies may be obtained from BSI, Sales Branch, 2 Park Street, London, W.1. Price 4s.

Permeability of Flexible Sheet

British Standards have brought out a new publication — the tenth in a series on paper testing—which specifies a method of determining the permeability to water vapour of flexible materials used for packaging. The testing method in this standard (BS 3177) is based on that described in BS1133 for paper; BS3177 adapts the method for the plastics industry—and it will probably be suitable for rubber sheeting.

The 20 pp. booklet (which contains two full page plates illustrating typical apparatus) can be obtained from: BSI, 2, Park Street, London, W.1. Price 4s. 6d.

Plantation Commentary

MALAYAN LAND DEVELOPMENT

by our Malayan Correspondent

THE large-scale land development scheme which the Malayan Government plans to launch in the next five years seems likely greatly to increase the amount of smallholding rubber being produced in Malaya. It will also increase the dependence of many small farmers in Malaya on the rubber tree, still by far the most lucrative crop for Malayan soils.

The scheme for large-scale development was announced by the Prime Minister, Tengku Abdul Rahman, shortly after his party had been returned in the general elections with a substantial 74 to 30 majority which will ensure them office for the next five years. The Prime Minister will lead the land development programme assisted in the new Ministry of Rural Development by the Deputy Prime Minister, Tun Abdul Razak.

The aim is to give an economic piece of land to every rural family in Malaya that has none and to give more land to those who have not got enough. The physical business of land development will be followed by morale raising in the villages through community development which India has proved so successful. In community development the villages are urged to practise self-help in making their villages better places to live in, building roads, wells, community halls and so on with the help and advice and perhaps a little money from the Government.

The Prime Minister has made it plain that he wants to stop the drift from the rural areas to the towns. This began some time ago and, apart from draining the villages of young men, creates an unfortunate surplus of disgruntled, unemployed villagers in the towns.

The financial implications for any country of land development of the size that the Prime Minister has in mind are enormous and the Minister of Finance, Mr Tan Siew Sin, expressed the hope here on his return from New York that the International Development Association will be able to do the necessary. The World Bank has made it plain that this is not the type of business it wishes to do, though it generally regards Malaya favourably.

Successful Schemes

No details have been given yet by the Government of the extent of its land development programme and these have probably not been worked out yet. But two or three successful schemes have been run by the Federal Land Development Authority and they will, with modifications, be models for the larger Government schemes.

The latest seen by your correspondent is at Bilut Valley, in the shadow of the main mountain range, but on the undeveloped east side of Malaya, not far from Bentong.

Four hundred families had been moved onto the scheme in a somewhat remote valley eight miles from the nearest road. The access road had the previous day to this visit bogged two Land Rovers in succession, an unusual feat in Malaya, lending colour to the development authority's statement that settlers are told that they must not expect to make many trips to town in their first few years.

The scheme is based on 10-acre lots, seven of them high-yielding rubber. The other three acres are to be planted with various types of fruit trees which will bring in a different type of income. It is the rubber, however, that will provide most of the profits for the 1,300 families who should be installed within a matter of months.

Calculating on a price in Singapore of 1s. 5d. a lb. (the producers in the field get about a fifth less than this because of transport and other charges) it is estimated that the rubber and the profits from the sale of fruit will bring in a cash income to the farmers of between £40 and £50 a month, a substantial income for the small farmer in Malaya, although this will be somewhat reduced by the £700 or so which the farmer will owe the development authority at the end.

Instalment Plan

The scheme is self-sustaining and the money spent by the development authority, a semi-government organization, in clearing the land, providing the house materials, seeds, subsistence allowances, and the rest must be paid back in instalments once the rubber comes into bearing.

Life is not easy, however, for the Bilut Valley settlers who were picked from a sheaf of applications that came in.

The land was cleared and bulldozed by the authority and roads traced. A quick crop of hill rice was planted by the settlers on arrival to get some income coming in and then all were turned to while the planting season lasted to plant up 3,000 acres with high-yielding rubber.

This is a tough job in a valley with hardly a tree left for shade and the 400 settlers were working communally on planting rubber seeds which had been germinated in their own nurseries when your correspondent left them. When there is more time, surveyors will mark out the land among the growing rubber trees and plots of rubber land, seven acres each, will be given to the settlers. From then on they will each be responsible for their own particular plots.

With high-yielding rubber there seems no reason why this scheme should not be a success. The settlers are building their own houses, with materials supplied by the authority, when there is time. Until then, the families must live temporarily in lean-to sheds.

Bilut Valley is likely to be the pattern for similar schemes although there may be alterations in various ways. In Selangor State an immediate start is to be made next year with opening up 22,000 acres of land for the landless villagers. The settlers in Selangor will not get quite the same generous terms as Bilut Valley, eight acres of land (six of rubber, two other crops) instead of the Bilut Valley 10, and there will be a corresponding reduction in income when their rubber comes into bearing.

Other States are rapidly making plans and it seems likely that there will in due time be a considerable increase in the amount of smallholding rubber in Malaya, now put at 1,500,000 acres.

Fragmentation and Take-Overs

No one in Malaya seems yet to have had the time to consider dispassionately and from a position of authority fragmentation and take-over bids which are rapidly altering the picture of the Malayan rubber industry. There was therefore considerable interest when Mr D. E. Teale, the president of the Malayan Planting Industries Employers' Association, spoke on the subject at a recent Junior Chamber luncheon.

Mr Teale said that there were many reasons why take-over bids might be made and accepted for Malayan rubber companies, including small subscribed capital, replanting difficulties and fears for the future. Apart from the actual estate, the take-over bidder might also be interested in the company's cash reserves.

'There is a commonly held opinion that there is something unsavoury about the take-over bid, something immoral if not illegal,' he said. 'This is partly because so many take-over bids have been made simply for the enrichment of the bidder and partly because they have been followed sometimes by unsavoury dealings, but there is nothing reprehensible in the take-over bid itself.'

The bids were made for the purpose of amalgamation or to modernize an old-fashioned and uneconomic business. Many Malayan rubber companies were comparatively small as far as subscribed capital was concerned.

A capitalization of $225 an acre was not uncommon and for a very small outlay it was often possible to get a majority vote. The answer to this was for the company to become bigger, hence the number of amalgamations that had taken place.

Another point was the difficulty

facing some companies with replanting, which called for heavy expenditure, and the lack of information given to shareholders. To protect a company from a take-over bid it was important that the shareholders should be as well informed as possible about the true position.

Events in South East Asia had also given the overseas investor a sense of insecurity. In some countries where nationalism was bitter and tense, foreign investors had been the target of punitive restrictions.

'In Malaya itself there has been a long and costly war against the terrorists, a war that is by no means over though it may have taken a different form,' he said. 'The Federation Government is doing all it can to encourage investment, both local and foreign, because it is only by investment that the prosperity of a country can be increased.

Fear of Restrictions

'Many overseas shareholders, however, have no extensive knowledge of the countries of South East Asia and feel nervous that the same restrictions might be imposed on their interests as have been imposed elsewhere.'

The fact that this nervousness was unjustified was beside the point. The fact was that it did exist and nervous shareholders overseas tended to undervalue their interests. The local investor, better informed, and with no fears for the future, realized more exactly the true worth of property in Malaya.

He felt that the take-over bidders took advantage of the fact that the average shareholder of a rubber company knew only the market value of his share but not the value of the assets they represented.

Commenting on the purchase of estates for fragmentation (in which they are broken up and sold to smallholders for a profit, Mr Teal felt that some of the reasons for the recent spate of fragmentation bids were the prospects for natural rubber, the ending of the war against the Communists, a return of local capital to Malaya from countries where investment had not been so favourable and the fact that the Malayan investor valued land more highly than the overseas investor.

'It is a pity that this operation has been performed at a vast and untaxable profit by men with no thought of improving the country's economy or of providing for any much wanted need except that of satisfying the country's land hunger,' he said. 'Surely in a country as yet underdeveloped this could have been satisfied by other means which could have increased rather than diminish the country's production of wealth.'

Of Malayanization, he said that more companies were becoming Malayanized with the transfer to local ownership and with more Malayan shareholders, holding an increasing proportion of the share capital.

It seemed to him right that Malayans should have an increasing share of the returns and responsibilities but he hoped that the Government would continue to give a square deal to investors overseas, technicians, scientists, engineers and other men whose capital, work and skill had developed the country.

Also concerned about fragmentation is the National Union of Plantation Workers which is now to make a fresh attempt to have legislation introduced which will limit what they consider are the less desirable effects of estates being broken up.

The union's central executive committee has prepared papers and recommendations to be considered by the biennial delegates conference with, it is believed, particular reference to steps taken in Ceylon on fragmentation where a limit has reportedly been set to rubber estates being fragmented below 250 acres and tea estates 500 acres.

Japanese rubber leaders who paid a familiarization visit to Malaya emphasized that they expect Japan to purchase very much more rubber in 1960 than this year. The 22-member trade mission represented rubber manufacturers, importers and exporters. They studied local conditions and emphasized their wish to enter into friendly co-operation with the rubber producers. The leader of the mission, Mr M. Okuno, said he expected Japan to import 200,000 tons of rubber next year from Malaya and Indonesia.

FRANCIS SHAW MAKE NEW APPOINTMENT

Francis Shaw and Co. Ltd. have appointed Mr R. E. Hoyle, M.A. (Cantab), A.M.I.E.E., to the post of sales manager. He and the sales

R. E. HOYLE

department staff will handle all general sales matters, spare parts and publicity.

Mr Hoyle was previously a project engineer with the company. He has a considerable experience of engineering for the rubber and plastics industries, and has travelled widely in Great Britain and overseas on the company's behalf.

Indonesian Rubber

CONTINUOUS DECLINE IN PRODUCTION

CONTINUOUS declines in production and lack of large scale replanting will turn Indonesia from a leading rubber exporting nation into an importer, the secretary of the West Java Horticultural Committee said in Bandung recently.

Addressing a meeting of estate managers and local government officials, Mr R. S. H. Soebroto said rubber acreage had fallen from 620,003 hectares in 1938 to 423,009 hectares last year. Output had fallen more sharply in the same period from 608,019,032 kilos to 243,913,000 kilos. This was a decline in hectare output from an average 1,000 kilos to 600, Mr Soebroto said. Since the war nothing had been done in Indonesia to match the vigorous rehabilitation of other rubber producing countries.

The remaining Indonesian plantations were generally in a state of decline. Some 70% of their trees were more than 30 years old, and no plans for growing new trees had been announced. Individual plantations trying systematic replanting were bogged down on such problems as illegal land occupation and damage by roaming cattle.

Mr Soebroto said Indonesia should replant systematically until the pre-war acreage was reached and he suggested a seven-year Government rehabilitation plan to achieve this.

Tod Form New Company

W. and J. Tod Ltd. have formed a new company to handle their sales on the glass fibre marine side. The company, which claims to have the most comprehensive range of glass fibre boats in Europe, is called W. and J. Tod (Sales) Ltd. and has headquarters at Weymouth. Managing Director is Mr K. Bögeberg, who for many years has handled the sales of the parent company.

PATENT SPECIFICATIONS AND RUBBER STATISTICS

Owing to pressure on space these regular features have been held over until next week.

Synthetic Rubber Prices

Prices of synthetic rubbers appear regularly in RUBBER JOURNAL AND INTERNATIONAL PLASTICS *in the first week of each month. It will be appreciated if suppliers will give notification of any price changes or additions to their range. C/f duty paid quotations are subject to slight variation due to exchange, ocean freight and insurance fluctuations. Prices are in pence per lb., except where otherwise stated.*

(e-qdp)—Ex-quay duty paid (cifUKdp)—cif UK duty paid (e-i)—Ex-installation (ddp)—Delivered duty paid (e-sUK)—Ex-store UK (ex-wUK)—Ex-warehouse UK (d)—Delivered BM—black masterbatch CBM—cold, black masterbatch CNP—cold, non-pigmented CNS—cold, non-staining COE—cold, oil extended COELC—cold, oil extended, light coloured CO/BM—cold, oil black masterbatch CPOE—cold, pigmented, oil extended CRE—cold, rosin extended dw—Dry weight HN—high nitrile HNP—high nitrile, powder HP—hot, pigmented HS—high styrene LMW—low molecular weight MHN—medium high nitrile MLN—medium low nitrile MMW—medium molecular weight MN—medium nitrile NS—non-staining TS—total solids

SBR TYPES AND HIGH-STYRENE RUBBER

Ameripol (Goodrich Gulf) (e-qdp)
(min., 70,000-lb. lots)

1000 Hot, Non-Oil	23.10
1001 ,, ,,	23.10
1002 ,, ,,	23.34
1006 ,, ,,	23.34
1007 ,, ,,	23.34
1009 ,, ,,	23.71
1011 ,, ,,	23.71
1012 ,, ,,	23.24
1013 ,, ,,	23.94
1500 Cold, Non-Oil	23.10
1501 ,, ,,	23.10
1502 ,, ,,	23.10
1703 COE, 25% oil	*20.31
1705 ,, ,, ,,	*20.07
1707 ,, 37.5% ,,	*18.89
1708 ,, ,, ,,	*18.89
1710 ,, ,, ,,	*18.66
1712 ,, ,, ,,	*18.66

*Under 70,000 lb., min. 600 lb.

ASRC (American Synthetic Rubber Corpn.) (cifUKdp*)
(carloads lots of 30,000 lb.)

1000 Hot, Non-Oil	23.99
1001 ,, ,,	23.99
1004 ,, ,,	23.99
1006 ,, ,,	23.99
1009 ,, ,,	24.61
1018 ,, ,,	26.74
1019 ,, ,,	26.26
1500 Cold, Non-Oil	23.99
1502 ,, ,,	23.99
1503 ,, ,,	26.02
3110 ,, ,,	25.78
1703 COE	20.69
1708 ,,	19.27

*US/£ conversion rate $2.80

Cariflex (Shell Chemical Company) (e-sUK)

S-1000 Hot	22.0
S-1002 ,,	23.375
S-1006 ,,	22.0
S-1009 ,,	24.0
S-1011 ,,	24.0
S-1013 ,,	24.0
S-1100 Hot/black	19.75
S-1500 Cold	22.0
S-1502 ,,	22.0
S-1509 ,,	22.0
SP-103	28.0
S-1600 Cold/black	19.625
S-1602 ,, ,,	19.625
S-1605 ,, ,,	19.375
S-1703 COE	20.25
S-1707 ,,	17.75
S-1709 ,,	17.5
S-1712 ,,	17.5
S-1803 COBM	17.875

Copo (Copolymer) (cifUKdp)

1006 Hot, Non-Oil	23.25
1500 Cold, ,,	23.25
1502 ,, ,,	23.25
1505 ,, ,,	26.00
1712 COE	18.50
1778 ,,	18.75
3900 CRE	23.125

FR-S (Firestone) (cifUKdp*)

1000 Hot	23.187
1001 ,,	23.187
1004 ,,	23.187
1006 ,,	23.187
1500 Cold	23.187
1502 ,,	23.187
146 ,,	23.187
1703 Oil-Extended	20.125
1712 ,,	18.5
123 ,,	19.187
155 ,,	18.5
173 ,,	20.125
178 ,,	18.75
1009 Specialty	24.625
1010 ,,	25.812
1012 ,,	24.187
1013 ,,	24.875
1014 ,,	27.75
1015 ,,	28.75
141 ,,	28.625
158 ,,	29.562

*US/£ conversion rate $2.80

International Synthetic Rubber Co. (d)

Intol 1500	22.5
Intol 1502	22.5
Intol 1006	22.5
Intol 1710	18.0
Intol 1712	18.0
Intol 1778	18.25
	(ex-wks TS)
Intol Latices R23/M23	22.25

Philprene (Phillips) (e-qdp*)

1000 Hot, Non-Pig	23.28
1001 ,, ,,	23.28
1006 ,, ,,	23.28
1009 ,, ,,	24.69
1010 ,, ,,	25.86
1018 ,, ,,	26.80
1019 ,, ,,	26.33
1100 HP	19.65
1104 ,,	19.28
1500 CNP	23.28
1502 ,,	23.28
1503 ,,	26.10
1601 CP	19.56
1605 ,,	19.28
1703 COE	20.23
1706 ,,	19.94
1708 ,,	18.82
1712 ,,	18.58
1803 CPOE	17.78
1805 ,,	15.99

*US/£ conversion rate $2.81½

Plioflex (Goodyear) (ex-wUK)

1006 HNP	22.25
1500 CNP	22.25
1502 ,,	22.25
1507 ,,	22.25
1508 ,,	22.25
1006 S	22.75
1703 COE	19.25
1710 ,,	17.75
1712 ,,	17.75
1773 COELC	19.25
1778 ,,	18.0
B—6	27.5
B—5	28.0

Polysar (Polymer UK) (e-sUK)

S Hot	22.25
S-630 Hot	22.25
Kryflex 200 Cold	23.5
Krylene	22.25
Krylene NS	22.25
Krynol 651 COE	17.75
Krynol 652 ,,	18.0
S-X 371 Process Aid	24.0

Synpol (Texas-US Chemical Company) (cifUKdp)

1000 Hot, Non-Oil	23.10
1001 ,, ,,	23.10
1002 ,, ,,	23.34
1006 ,, ,,	23.20
1007 ,, ,,	23.20
1009 ,, ,,	23.71
1012 ,, ,,	23.24
1061 ,, ,,	23.10
X-274	25.32
8000	23.94
1500 Cold, Non-Oil	23.10
1502 ,, ,,	23.10
1551 ,, ,,	23.10
1703 COE	20.13
1707 ,,	18.71
1708 ,,	18.71
1711 ,,	18.62
1712 ,,	18.48
8200 ,,	18.71
8201 ,,	17.20
8150 CBM	19.46
8253 COBM	16.20
8254 ,,	15.83
8256 ,,	16.33

US/£ conversion rate $2.80

SBR LATICES

Copo (Copolymer) (cifUKdp)
(10-ton lots)

2101 (dw)	46.30
X-765 ,,	40.80
X-800 ,,	37.20
2102 ,,	38.00
2105 ,,	38.00
2110 ,,	38.00

Naugatex (Naugatuck Chemical International) (ex-wUK)

2000	39
2001	39
2002	39.5
2006	43
2105	40
2107	40
2108	40
2711	39
2714	39
2733	39
2740	43

Pliolite Rubber (Goodyear) (d)

2000	40

Latex

2001 (dw)	40
2104 ,,	40
2105 ,,	40
2108 ,,	40
5350 ,,	40

Pliolite Resin (Goodyear) (d)

101A (dw)	44
150 ,,	50
151 ,,	35
160 ,,	50
170 ,,	50

Hycar (B. F. Goodrich) (cddp)

2507 (HS) dw	48

Polysar (Polymer UK) (e-sUK)

Latex, type IV	32.5 TS
Latex, type 722	31.75 TS
(Non-returnable 45-gallon drums)	(e-i)
Latex, type 722	28.75 TS
(bulk quantities)	

International Synthetic Rubber Co. (ex-wks)

Intol Latex R23	22
Intol Latex M23	22

ACRYLONITRILE TYPES

Butaprene N (Firestone) (cifUKdp)

NL	52.5
NAA	56.25
NF	51.5
NXM	60.18

Chemigum (e-s)

N—1	75
N—3A	52
N—5	52
N—6G	45
N—7	45
N—8	45
N600X	45

Hycar (British Geon) (UKd)
(500-lb. lots and over)

1001 High Nitrile Hot	52
1041 ,, ,, Cold	52
1002 MHN Hot	45
1042 ,, Cold	45

Hycar (B. F. Goodrich) (ddp)
(500-lb. lots and over)

1411 HNP	66
1432 MHN (crumb)	64
1072 ,, (carboxyl)	66
1312 ,, (liquid)	55
1043 MLN	51
1014 Low Nitrile	61

I.C.I. (min., 5-cwt. lots) (UKd)

Butakon A-4051 HN Cold	52
Butakon A-3051 MN Cold	45
Butakon A-3002 ,, ,,	45

Paracril (US Rubber) (e-sUK)

18-80 Low Nitrile	63
AJ ,, ,,	50
B MLN	51
BJ ,,	51
BLT ,, Cold	51
BJLT ,, ,,	51
C MHN	59
CLT ,, Cold	59
CV ,, (crumb)	60
D High Nitrile	67
ALT	51

Polysar (Polymer UK) (d)

Krynac 800 MN	45
Krynac 802 LN	45
Krynac 803 MN (low Mooney)	45
Krynac 801 HN	52

ACRYLONITRILE LATICES

Butaprene N (Firestone) (cifUKdp)

N-300 (dw)	53
N-400 ,,	60.5

Chemigum Latex (Goodyear) (d)

200 (dw)	65
235 CHS ,,	60
236 ,,	60
245 B ,,	52
245 CHS ,,	52
246 ,,	52
247 ,,	52
248 ,,	52

Hycar (B. F. Goodrich) (ddp)
(dry weight, drum lots)

1551 High Nitrile	66
1552 MHN	57

Hycar (British Geon) (UKd)
(dry weight, 3 drums and over)

1561 High Nitrile	60
1571 ,, ,, (carboxyl)	60
1562 MHN	52
1577 ,, (modified)	52

ACRYLIC TYPES

Hycar (B. F. Goodrich) (ddp)

4021 Slab, 500 lb. and over	144
4501 Latex, dry weight	96

BUTYL TYPES

Esso (e-sUK)

Regular 035	21.75
Regular 150	21.75
Regular 215	21.75
Regular 217	21.75
Regular 218	21.75
Regular 325	21.75
Non-staining 065	22.75
Non-staining 165	22.75
Non-staining 265	22.75
Non-staining 267	22.75
Non-staining 268	22.75
Non-staining 365	22.75

Vistanex (Polyisobutylene) (e-qdp)

MS LMW	54
MH ,,	54
L-80 MMW	54
L-100 ,,	54
L-120 ,,	54
L-140 ,,	54

Polysar (Polymer UK) (e-sUK)

Butyl 100	21.75
Butyl 200	21.75
Butyl 300	21.75
Butyl 301 NS	21.75
Butyl 400	21.75
Butyl 101 NS	26.25
Butyl 402	22.5

Hycar (B. F. Goodrich) (ddp)
(500 lb. and over)

2202 Brominated	68

NEOPRENES

(e-qdp)

W and WHV (dwdel)	42.62
WRT ,,	48.37
WX ,,	44.62
GN ,,	44.62
GNA ,,	44.62
GRT and S ,,	45.62
AC ,,	57.125
KNR ,,	75.62
AC 'M' and 'S' ,,	57.125
CG ,,	57.125
AD ,,	57.125

Latices—Dry
(per lb. del, min., 50 lb.)

571	49.75
842A	49.75
572	51.25
601A	51.87
650	54.125
735	51.25
736	51.25
950	58.25
60	51.87
750	51.25
635	53.62

SILASTOMER

Midland Silicones
(500-lb. lots del)

Stocks	16s. 6d. to 35s.
Pastes	26s. to 35s.
Gums and base stock	36s. to 42s.
Cold-curing silicone rubber	20s. and 23s. 6d.

REINFORCING RESINS AND RUBBERS

I.C.I. (min., 2-ton lots) (UKd)

Butakon S-8551	36.5
Butakon S-7001	33.5

Hycar (B. F. Goodrich) (ddp)

2007 (powder)	42.5

Pliolite (Goodyear) (d)

S—6B	36.5

Polysar (Polymer UK) (e-sUK)

SS-250 HS (bale)	27.25
SS-250 ,, (flake)	27.5
Kryflex 252 HS	25.5

Cyclite (Durham Raw Materials) 42

HYPALON

In 50-lb. bags del UK 71.62

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

THE stock market celebrated the Christmas session with another round of big rises.

Right up to the holiday break, business was fairly active and many of the leading favourites soared merrily to further new peaks.

1959 will surely go down as one of the most memorable in the history of the Stock Exchange.

Even the oldest members cannot remember anything like it. It is estimated that something exceeding £5,000 million has been added to the value of industrial share prices.

It has been an especially good year for those investors who have bought plastic, chemical and rubber shares, as a glance at our 'high' and 'low' table below shows.

We have estimated the rises for each group are as follows:

	% change
Rubbers	+ 70%
Plastics	+ 60%
Chemicals	+ 45%

Over the past few weeks shares of the giant IMPERIAL CHEMICAL INDUSTRIES combine have been particularly active.

Heavy inquiry from all quarters of the investment world has pushed the price up another 4s. to a new 'high' for the year of 60s. 6d.

As one of the biggest leaders in the whole of the market this kind of movement more or less sets the pace for the rest; and with investors seemingly convinced that the New Year would start with a swing, there were plenty of buyers for the other top-liners.

News of record man-made fibres production in November switched the spotlight on COURTAULDS £1 shares which improved from 60s. 9d. to 66s. 6d.

There is much discussion being absorbed at the present time about this company in the city.

Some people are saying that the board's diversification plans will come undone.

They point out that when competition comes tough they will be driven out of the industries they have entered by the bigger concerns.

Those on the other side of this argument point out that the group would never have gone into a field of business without being confident that they could match their rivals on equal terms.

Another bright performer was BRITISH XYLONITE whose shares bounded to yet another new peak of 84s. At this level the return is now down to £3 5s.%.

Here is a good instance of the high regard plastic shares at the moment enjoy with the investing public.

DISTILLERS are yet another leader to have touched a new 'top' at 38s.

LEYLAND AND BIRMINGHAM RUBBER, DE LA RUE, BAKELITE, ALBRIGHT AND WILSON and ANCHOR CHEMICAL were other well-known names to show up well over the past few weeks. We expect all these to do well in the year that lies ahead.

Continued on page 27

Share Price Movements

Par Value	Company	1958-59 High	Low	Dec. 19	Latest
£1	A.E. Ind. Ord.	67/-	54/-	59/-	59/6
5/-	Albright & W. Ord. ..	30/-	13/4½	26/9	30/-
£1	„ „ „ 5% Pref.	18/6	15/4½	18/6	18/6
5/-	Anchor Chemical Ord...	26/-	10/3	22/9	25/9
5/-	Andersons Rub. Ord. ..	4/3¾	3/-	3/1½	3/1½
£1	Angus Geo. Ord. ..	37/6	21/-	37/-	36/6
5/-	Ault & Wiborg Ord. ..	23/-	11/9	21/9	23/-
£1	Avon India Rubber Ord.	46/3	27/-	46/3	46/-
£1	„ „ „ 6% Pref.	18/6	17/3	17/6	17/9
10/-	Bakelite Ord.	40/-	17/-	38/-	39/6
£1	„ 6% Pref. ..	19/6	18/3	18/3	18/3
£1	Baker Perkins Ord. ..	53/-	30/7½	52/6	53/-
4/-	Bank Bdg. Rubber Ord.	3/1½	1/6	3/-	3/-
5/-	Boake (A) Roberts Ord.	25/6	9/-	24/9	22/-
£1	„ „ „ 5% Pref.	15/1½	13/9	15/-	15/-
4/-	Brammer H. Ord. ..	16/6	9/6	16/-	16/6
10/-	Bridge, David Ord. ..	57/6	16/3	46/3	57/-
5/-	Bright, John Ord. ..	18/3	8/9	18/-	17/9
2/-	Brit. Ind. Plas. Ord. ..	10/7½	4/9	10/-	10/6
2/-	„ 10% (tax free) Pref.	5/9	4/9	4/3	4/3
£1	British Xylonite Ord. ..	84/-	28/6	75/-	84/-
£1	„ „ 5% Pref.	16/9	14/-	15/9	16/9
£1	BICC Ord.	61/-	46/3	57/3	58/-
5/-	BTR Ind. Ord.	13/3	8/1½	8/9	10/6
£1	„ „ 7½% Pref. ..	24/3	20/9	23/9	23/9
£1	Courtaulds Ord. ..	67/3	20/-	60/9	66/6
£1	„ 5% 1st Pref.	18/9	15/7½	17/6*	17/9
£1	„ 6% 2nd Pref.	21/9	17/1½	21/-	21/-
4/-	Cow, P. B. Ord. ..	7/3	3/6	6/7½	6/10½
£1	„ „ 5% Pref. ..	15/-	10/9	15/-	15/-
1/-	Dannimac Mfg. Ord. ..	10/6	2/6	9/9*	10/3
10/-	De La Rue Ord. ..	71/-	42/9	67/6	70/-
£1	„ „ „ 3½% Pref. ..	12/6	10/-	12/6	12/6
10/-	Distillers Co. Ord. ..	38/-	15/9	36/7½	38/-
£1	„ „ 6% Pref...	22/3	19/10½	22/-	22/-
£100	„ 5% Conv. Loan	£96½	£91	£94½	£94½
£100	„ 5½% Unsec. Loan	£97	£87 7/16	£96½	£96½
10/-	Dunlop Rubber Ord. ..	29/-	14/9	26/4½	27/6
£1	„ „ 5½% Pref.	19/4½	15/10	19/1½	19/-
£100	„ 3½% 1st Debs.	£77½	£67¼	£77½*	£77½
£100	„ 4½% 2nd Debs.	£88	£78	£86	£86
£1	Eng. Elect. Ord. ..	61/-	38/-	47/9	50/-
4/-	Ebonite Cont. Ord. ..	15/3	7/6	13/6	14/-
£1	English China Clays Ord.	80/9	29/9	78/6	80/6
£1	Goodyear Tyre 4% Pref.	12/9	12/-	12/6	12/6
5/-	Greeff Chem. Ord. ..	31/3	14/-	31/-	31/-
10/-	Greeff Chem. 5½% Pref.	8/6	7/9	8/3	8/3
5/-	Hackbridge Hldg. ..	19/9	14/6	16/3	16/3
4/-	Greengate & Irwell Ord.	7/0½	4/1½	5/7½	5/3
£1	Harrisons & Crosfield Dd.	83/3	43/9	55/-†	56/3
1/-	Hunt & Moscrop Ord...	2/1½	1/1½	1/10½	2/-
£1	Imp. Chem. Ord. ..	60/6	28/3	56/6	60/6
£1	„ „ 5% Pref. ..	18/10½	16/-	17/3*	17/6
£100	„ 4½% Unsec. Loan	£90	£80	£87½	£88
£100	„ 5½% Conv. Loan	£188	£99	£174	£184½
1/-	Kleemann (O. & M.) Ord.	9/0½	2/6	8/9	9/-
£1	„ „ 6½% Pref.	18/6	15/-	18/4½*	18/4½
2/-	Lacrinoid Prod. Ord. ..	4/3	1/5½	3/-	4/3
5/-	Laporte Ind. Ord. ..	30/3	13/7½	27/3	30/-
£1	„ „ 7½% Pref.	24/3	21/10½	23/9	23/9
£1	Leyland & Birm. Rubber Ord.	58/9	39/9	50/-	55/-
£1	„ „ „ 6% Pref.	21/3	16/1½	18/-	18/-
2/-	London Rubber.. ..	14/3	6/3	13/9	14/3
£1	„ 6% Red. Cum. Pref.	19/9	16/3	18/9*	18/9
£1	McKechnie Bros. Ord...	62/6	23/6	61/3	61/3
£1	„ „ 'A' Ord.	63/3	30/-	61/-	62/6
£1	„ „ 6% Cum. Pref.	17/-	16/-	17/-	17/-
5/-	Monsanto Chem. Ord. ..	25/3	13/-	23/-	25/3
£1	„ „ 3¾% Pref.	13/6	11/-	12/6	13/-
£100	„ „ 6% Debs.	£104	£101¼	£102½*	£104
£1	North British Rubber ..	20/1½	15/7½	18/3	19/3
5/-	Redfern Holdings Ord...	5/9	2/10½	5/7½	5/6
2/-	RFD Ltd. Ord.	6/6	3/5¼	5/6	5/-
£1	„ „ 5½% Pref. ..	16/-	11/6	16/-	15/6
2/-	Rubber Imp. Ord. ..	15/6	4/4½	4/4½	6/-
2/-	„ „ 'A' Ord. ..	14/3	3/9	4/1½	4/9
£1	„ „ 5% 1st Pref.	13/3	10/-	13/-	13/3
5/-	Rubber Reg. Ord. ..	18/-	10/6	15/9	17/9
4/-	Shaw Francis Ord. ..	23/-	9/9	21/9	23/-
2/-	Silentbloc Ord.	10/6	7/6	10/1½	10/6
2/-	Sussex Rubber Ord. ..	1/11½	7½	1/7½	1/7½
5/-	Sutcliffe Speak Ord. ..	11/9	5/-	9/9	11/6
£1	Turner & Newall Ord. ..	109/6	52/-	104/-	109/3
£1	„ „ „ 7% Pref.	25/6	22/1½	24/9	25/-
5/-	Universal Asbestos Ord.	31/6	8/0½	30/-	31/6
5/-	Viscose Dev. Ord. ..	13/9	6/3	13/9	13/9
5/-	Warne William (Holdgs.) Ord.	17/6	8/-	17/6	17/4½

*Ex-dividend †Ex-scrip issue

Rubber Markets

LONDON

Generally quiet conditions prevailed in the London rubber market during the Christmas period and there is little net change in prices. News that Russia is to sell a substantial amount of rubber from its stockpile had a limited effect on the market as this news was not unexpected. Compared with the levels ruling a fortnight ago, Spot is $\frac{3}{8}$d. lower at 34d. per lb. and near forward positions are easier but the more distant positions record modest gains. This reflects the generally optimistic view of business prospects for 1960 both in the UK and the United States.

Latest prices are as follows:

No. 1 RSS Spot: 33$\frac{3}{4}$d.-34$\frac{1}{4}$d.

Settlement House:

February 32$\frac{3}{4}$d.-33d.
March 32$\frac{1}{4}$d.-32$\frac{1}{2}$d.
April/June 31$\frac{1}{4}$d.-31$\frac{1}{2}$d.
July/September 30$\frac{1}{8}$d.-30$\frac{3}{4}$d.
October/December 30d.-30$\frac{1}{4}$d.

No. 1 RSS cif basis ports:

January 32$\frac{3}{4}$d.-33d.
February 32$\frac{3}{4}$d.-33d.

Godown:

January 111$\frac{7}{8}$ Straits cents nominal.

LATEX

Centrifuged latex per gallon in drums, January 19s. 11d., March 20s., cif European ports. Spot, 20s. 4d. Bulk, nominal, 19s. 7d. Creamed, seller, January, 19s. 3d. Normal, seller, 15s. 6d.—January/February.

AMSTERDAM

The Amsterdam rubber market ruled as under on December 28:

	Guilders per kilo	
No. 1 RMA	Dec. 28	Previous
December ..	Deleted	3.34
January	3.29	3.33
February	3.29	3.33
March	3.29	3.33
January/March ..	3.29	3.33
April	3.13$\frac{1}{2}$	3.15
May	3.13$\frac{1}{2}$	—

Sales: Nil. Tendency: Dull.

BANGKOK

No. 1 RSS

The price for No. 1 RSS, at Bangkok on December 28 was 37$\frac{1}{4}$ (37$\frac{3}{4}$) US cents per lb.

SINGAPORE

The market opened uncertain on disappointing overseas advices. Unsubstantiated rumours of Soviet market operations further unsettled dealers and, with upcountry liquidation, the price eased in thin dealings. Factories were quiet. Afternoon trading was quiet and the turnover restricted. Lowers were quiet. After hours, the market was dull.

	Straits cents per lb., fob Malayan ports to open ports	
	Dec. 28	Previous Close
No. 1 RSS, Jan.	115$\frac{7}{8}$–116$\frac{1}{4}$	118$\frac{1}{4}$–118$\frac{1}{2}$
Feb.	115$\frac{7}{8}$–116$\frac{1}{4}$	118 –118$\frac{1}{4}$
No. 2 RSS, Jan.	115$\frac{1}{4}$–115$\frac{7}{8}$	117$\frac{3}{8}$–118$\frac{3}{4}$
No. 3 RSS, Jan.	114$\frac{1}{2}$–115$\frac{1}{4}$	117$\frac{1}{4}$–118
No. 4 RSS, Jan.	113$\frac{1}{2}$–114$\frac{3}{4}$	116 –117
No. 5 RSS, Jan.	111$\frac{1}{2}$–113	114 –115
No. 1 RSS, Spot	115$\frac{7}{8}$–116$\frac{1}{4}$	118$\frac{1}{2}$–119$\frac{1}{4}$
No. 3 blanket, thick remilled, January ..	114 –116	116 –118
No. 1 fine pale crepe, Jan. ..	132 –134	134$\frac{1}{2}$–136$\frac{1}{2}$
2x thin brown crepe, Jan. ..	113 –114	115 –116

Tendency: Dull.

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums fob at 205.80d. per gallon.

CEYLON

No. 1 RSS

The price for No. 1 RSS, spot, at Colombo on December 28 was 133$\frac{1}{4}$ (137) Ceylon cents per lb.

NEW YORK

The following landed prices ruled in New York on December 28:

DEALERS' PRICES

	Ex-dock US cents per lb.	
	Dec. 28	Previous
No. 1 RSS, Jan. ..	41$\frac{1}{2}$n	41$\frac{3}{8}$n
Feb. ..	40$\frac{7}{8}$n	41$\frac{1}{8}$n
No. 2 RSS, Jan. ..	41$\frac{3}{8}$n	41$\frac{1}{2}$n
Feb. ..	40$\frac{7}{8}$n	41$\frac{1}{8}$n
No. 3 RSS, Jan. ..	41$\frac{1}{8}$n	41$\frac{1}{8}$n
Feb. ..	40$\frac{7}{8}$n	41n
No. 1 RSS, Spot ..	41$\frac{3}{8}$n	42n
No. 3 amber blanket, crepe, March ..	38$\frac{1}{8}$b–38$\frac{3}{8}$a	40$\frac{1}{8}$n
No. 1 latex thin crepe	44$\frac{1}{4}$n	44b
No. 1 latex, thick crepe, Jan. ..	44$\frac{3}{8}$n	44$\frac{3}{8}$n

FUTURES—REX CONTRACT

	US cents per lb.	
	Close	Prev. Close
Jan. ..	41.50t	41.50 –41.40t
Mar. ..	40.00t	39.90b–40.00a
May ..	38.50b–38.60a	38.70b–38.85a
July ..	37.55b–37.70a	37.80b–38.15a
Sept. ..	36.95b–37.10a	37.20b–37.40a
Nov. ..	36.55b–36.80a	36.80b–37.05a
Jan. ..	36.15b–36.40a	36.50b–36.65a

Sales: 61. Tendency: Irregular.

Rubber futures were a little irregular but relatively steady considering the decline abroad, according to trade sources. These sources said the decline in Singapore reflected rumours that the Soviet Union was releasing 50,000 tons of rubber from her stocks for trading with members of the Soviet economic bloc. On the market here, nearby positions were steady, reflecting the scarcity of physical rubber for nearby delivery. Physical rubber was quiet, and offerings from the Far East were limited. Factory interest was slow. In the closing stage, nearby futures were steady and more distant months generally softer.

DJAKARTA

The market was quiet and idle on December 28. No transactions were reported.

	Rupiahs per kilo	
	Dec. 28	Previous
Spot No. 1 Priok ..	53.00n	52.50b
Spot No. 2 Priok ..	52.00n	51.50b
Spot No. 3 Priok ..	51.00n	50.50b
No. 1 fine pale crepe, spot	46.50n	46.50b

Tendency: Quiet.

STOCK MARKET

Continued from page 26

After their tumble following the disappointing results, RUBBER IMPROVEMENT have picked up to 6s. 4$\frac{1}{2}$d.

While DANNIMAC are up on balance at 10s. 3d. in spite of the warning from Lord Keyes, the chairman, at a recent meeting. He said that the directors had no intention of increasing the dividend 'in the near future' owing to plans for future expansion.

Excellent results were announced by DAVID BRIDGE AND CO., engineers and ironfounders to the rubber, plastic, cable and associated industries.

The net profit has improved from £160,300 to £227,500. This was after meeting a higher tax bill of £224,900 against £155,600 and depreciation of £39,800 compared with £33,300.

A final dividend of 15% plus a bonus of 5% made up the year's total to 25%. Last time an equivalent of 11$\frac{1}{2}$% was paid.

Immediately after the news was flashed through the 'House,' dealers in the shares hoisted them 10s. 6d. to 57s. 6d. Profit-taking, however, later trimmed them back a little to 57s.

Heenan and Froude Ltd., of Worcester, are to supply a complete tyre test plant to the London Trans-Port Executive for use at its engineering depot at Chiswick. This is believed to be the first time that any British public road transport operator has installed a plant of this kind. The machine now under construction at Worcester has been specially designed to the LTE's requirements and will be used mainly for research into the fuel consumption of London buses. It will differ from other recent tyre testing machines built by Heenan and Froude in that it will provide for two tyres to be brought into contact with each other instead of the more usual arrangement of a single tyre being tested against a revolving drum.

Industry INTELLIGENCE

Technical Data

Vulcanizable Mixtures of Rubber with Polythene and Polypropylene

A recently patented development in the use of polythene and polypropylene is the blending of these plastics with natural and synthetic rubbers to produce vulcanizable compositions. The relevant patents are No. 821,846 covering rubber-polythene blends and No. 822,621 covering rubber-polypropylene blends, published October 14 and 28 1959, respectively, the patentees being I.C.I. The polythene or polypropylene is mixed with the rubber, free from vulcanizing ingredients, at elevated temperature on an open mill or in an internal mixer, vulcanizing and other compounding ingredients being subsequently incorporated in the blend.

Polythene

In the case of polythene, the amount recommended for use is between 10% and 35% of the combined weight of the rubber and polythene. Best results are achieved by using a polythene of specific gravity greater than 0.92. Such high density polythene is obtained, for example, by polymerization of ethylene at low pressure or by a modification of the high-pressure process using particular catalysts. Properties of natural or synthetic rubber compounds which may be improved by incorporating polythene in the compound include tensile strength, modulus, hardness, ageing and ozone resistance, abrasion resistance, tear resistance and electrical properties. Rubber-polythene blends are of special interest in the manufacture of electric cables owing to the reinforcement of the physical properties of the rubber together with enhanced ageing and ozone resistance and higher electrical resistivity imparted by the presence of polythene. Where non-black reinforcement of rubber is required, the blends are valuable for tyres and footwear including microcellular soling and harder non-blown types of soling. High-styrene resins may be incorporated in the soling compounds. In the case of butyl rubber, which normally has a low modulus and low hardness, an improvement in the properties is obtained by blending about 30 parts of polythene with 100 parts of the butyl rubber. Test results are included in the patent specification (No. 821,846) showing the effect of incorporating polythene in compounds based on smoked sheet, pale crepe, cold-polymerized SBR and butyl rubber.

Polypropylene

For the rubber-polypropylene blends, isotactic polypropylene is used, the preferred amount being between 5% and 25% of the combined weight of rubber and polypropylene. Isotactic polypropylene is a solid polymer of propylene which contains a major proportion of crystalline polypropylene, and for the purpose of blending with rubber the isotactic polypropylene is preferably at least 70% insoluble in hot heptane. The melting point of isotactic polypropylene is approximately 160°C. and mixing of the polypropylene with the rubber has to be carried out at about this temperature. Blending on an open mill or in an internal mixer is preferably conducted in the presence of an antioxidant; commercial synthetic rubbers often contain a suitable antioxidant in sufficient quantity for this purpose. After vulcanization, the blends have high tensile strength, modulus, resilience and hardness, good resistance to abrasion and tear, and excellent electrical properties, and they retain these good physical properties at elevated temperatures.

For example, a natural rubber-polypropylene blend containing 20% of polypropylene had the following properties after vulcanization: Tensile strength 3,150 psi, elongation at break 500%, modulus at 300% elongation 1,910 psi, hardness 80 BS degrees, crescent tear strength 1,200 psi, resilience (Dunlop Tripsometer) 59% at 20°C. and 69% at 70°C. The patent specification (No. 822,621) contains test results on blends of polypropylene in other proportions with natural rubber and in a range of proportions with SBR and butyl rubber. Data showing the effect of the progressive replacement of carbon black by polypropylene in natural rubber and in butyl rubber compounds are also included. For instance, a vulcanized natural rubber compound containing 50 phr of carbon black and no polypropylene had a tensile strength of 2,860 psi, while a compound containing 10 phr of carbon black and 20 phr of polypropylene, but otherwise similar to the first compound, had a tensile strength of 3,120 psi.

Machines, Materials and Equipment

New Self-Priming Pump

Precision Pumps, of Lytham Street, Cale Green, Stockport, have brought out a new vertical self-priming unit, the VRL.225. This is designed for general purpose pumping duties, primes quickly, can be used for volatile liquids, and occupies an area of less than one square foot. New features include a casing designed so that if the foot valve on the suction line becomes inoperative the pump will continue to work, and a specially shaped impeller fitted with very short blades to prevent breakage on bending.

High Impact PVC Cements

A complete range of cements designed for bonding high impact PVC piping is now being made by Progressive Finishes Ltd., Stockley Street, Northampton. The cements are all based on Geon PVC, are supplied in 4oz., quart, gallon and five-gallon containers, and the range consists of seven grades, each formulated according to particular requirements:

Grade 1. Recommended for use where ventilation is poor.

Grade 2. Similar to Grade 1 but faster drying.

Grade 3. Specially produced for use with threaded high impact PVC joints. The drying time has been controlled to enable threading of the joints to be made secure before bonding.

Grade 4. Similar to Grade 2 but cement is glass clear.

Grade 5. Non-flammable cement, but slightly toxic.

Grade 6. Produced especially to the requirements of water boards; the smell of solvent disappears within two hours.

New Publications

Ultramid S

The Badische Anilin- and Soda-Fabrik AG, Ludwigshafen am Rhein, have issued a revised edition of their leaflet describing Ultramid S. The product is a polyamide plastic derived from sebacic acid and hexamethylenediamine. It is characterized, the leaflet states, by its low water absorption which renders it suitable for components which are required to possess good dimensional stability under conditions of varying atmospheric humidity. Ultramid S is supplied in different grades with varying melt viscosity for moulding and extrusion. A general account is given of the properties and methods of processing, special attention being directed to the effects of the moisture content on the mechanical and electrical properties.

BS for Rigid PVC

A sister publication to the specification for flexible PVC extrusion compounds (BS 2751), this new British Standard for rigid PVC extrusion and moulding compounds (BS 3168:1959) specifies three types of compound. They are classified according to their softening points, and they may be in chip, cube, strip, or any other convenient form. The standard is based on technical data supplied by the British Plastics Federation.

Control tests and type tests for the determination of seven properties are as those laid down in BS 2782: 'Methods of testing plastics.' An appendix to this eight-page publication describes the preparation of moulded test sheet from compound.

Copies of this standard may be obtained from the BSI, Sales Branch, 2, Park Street, London, W.1. Price 3s.

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

KEDETTES (789,496) For rubber-soled canvas shoes for women, girls and children. By United States Rubber Co., 1230 Avenue of the Americas, City and State of New York, United States of America. Address for service is c/o Haseltine Lake and Co., 28 Southampton Buildings, Chancery Lane, London, W.C.2. (Class 25; October 7 1959.)

CETACLO (772,367) For braids, ribbons and tapes, all being textile smallwares made of plastics. By E. Bourgeois Société Anonyme, 34 Rue de Liège, Paris 8eme, France. Address for service is c/o Matthews, Haddan and Co., 31-32 Bedford Street, Strand, London, W.C.2. (Class 26; October 7 1959.)

NUOSTABE (788,809) For chemical products included in Class 1 for use as stabilizing agents in the manufacture of vinyl plastics. By Heyden Newport Chemical Corporation, 342 Madison Avenue, New York. Address for service is c/o Marks and Clerk, 57 and 58 Lincoln's Inn Fields, London, W.C.2. To be associated with No. B631,045 (3625, 572) and others. (Class 1; November 18 1959.)

FLOMAX (B789,532) For chemical products used in industry, science and photography; and plastics included in Class 1. By the National Lead Co., 111 Broadway, New York 6. Address for service is c/o Boult, Wade and Tennant, 112 Hatton Garden, London, E.C.1. (Class 1; November 18 1959.)

POLYPATCH (792,817) For synthetic resins in the form of foil, tape, sheet or patches for use in repairing metals. By Albin Products (Manchester) Ltd., 10 Tonman Street, Manchester, 3. (Class 1; November 18 1959.)

HYPOTHENE (792,906) For paints, varnishes (other than insulating varnish), enamels, lacquers and surface coatings of synthetic rubber in the nature of paints or lacquers; anti-corrosives; and preservatives against rust and against deterioration of wood. By G. A. Willis (Middlesbrough) Ltd., Vulcan Paint Works, Avenue "C," Aycliffe Industrial Estate, Aycliffe, near Darlington, County Durham. (Class 2; November 18 1959.)

SUPEARL (792,404) For dental materials made of plastics for use in the manufacture of artificial dentures. By Thornton Plastics Ltd., Blackpool Road, Thornton, Blackpool, Lancashire. To be associated with No. 629,993 (3476, 531). (Class 2; November 18 1959.)

TWILASTIC (793,122) For plastic-covered wire (other than insulated or fuse wire). By Tinsley Wire Industries Ltd., Sheffield Road, Sheffield, 9. To be associated with No. 666,353 (3688, 1040) and others. (Class 6; November 18 1959.)

PANG (789,585) For patches and gaiters, all for repairing and reinforcing tubes and tyres; and tube and tyre repair outfits; all included in Class 12. By Pang Chemical Vulcanizers Ltd., Imperial House, Dominion Street, London, E.C.2. (Class 12; November 18 1959.)

FLEXIPLAID (B788,011) For rubber and synthetic rubber, all for use in the manufacture of soles for footwear. By Fussell's Rubber Co. Ltd., Knightstone Mills, Station Road, Worle, Weston-super-Mare, Somerset. (Class 12; November 18 1959.)

EPIFORM (789,327) For plastics included in Class 17 in the form of rods, sheets, tubes and shaped sections. By C.V.A. Jigs, Moulds and Tools Ltd., 329 Portland Road, Hove, Sussex. To be associated with No. 789,325 (4229, 827). (Class 17; November 18 1959.)

MELIMATT (792,411) For plastics included in Class 17 in the form of sheets and of films, all for use in manufacture. By Lawes Rabjohns Ltd., Dacre Works, Brooklands Road, Weybridge, Surrey. (Class 17; November 18 1959.)

DECROBOND (789,826) For composition boarding or panelling made of laminations of plastics with non-metallic materials. By A. J. Wares Ltd., Enterprise House, King Street, South Shields, County Durham. (Class 19; November 18 1959.)

Future Events

INSTITUTION OF THE RUBBER INDUSTRY

Wednesday January 6 at the Institution, 4 Kensington Palace Gardens, London, W.8. Meeting of the Papers and Publications Committee at 9.45 a.m., of the Finance Committee at 11.45 a.m., and of the Executive Committee at 2.30 p.m.

Leicester Section.—Monday January 11 at the Grand Hotel, Leicester. 'Some Recent Developments in Rubber and Plastics Machinery,' by K. M. Wilson, A.M.C.T., A.M.I.Mech.E. (David Bridge and Co. Ltd.). Joint meeting with the Plastics Institute.

London Section.—Tuesday January 12 at the Royal Society of Tropical Medicine and Hygiene, Manson House, 26 Portland Place, London, W.1. At 5.30 p.m., 'Chemical Plant Lining,' by J. Westhead, A.R.I.C., A.M.C.T., A.I.R.I. (BTR Industries Ltd.). At 7 p.m., 'Hypalon Coatings,' by Dr I. N. Milne (Du Pont (UK) Ltd.).

Manchester Section.—Monday January 11 at the Newton Heath Technical College, Manchester, at 6 p.m. 'White Reinforcing Fillers,' by J. D. Harris, B.Sc. (Hardman and Holden Ltd.).

Merseyside Section.—Monday January 11 at the Exchange Hotel, Liverpool, at 7.15 p.m. 'The Development of SB-R Manufacture in the United Kingdom,' by K. G. Burridge, M.A., M.Ch.E., A.R.I.C., A.M.I.Chem.E. (International Synthetic Rubber Co. Ltd.).

Midland Section.—Monday January 11 at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 6.45 p.m. 'The Physical Structure of Rayon Tyre Yarns,' by E. V. Reeves, B.Sc., A.Inst.P. (Courtaulds Ltd.).

Preston Section.—Monday January 11 at the BTR Industries Social Club, Farington, Preston, Lancs., at 7.15 p.m. 'Some Thoughts on the Characteristics and Uses of Modern Carbon Black,' by N. C. H. Humphreys, F.I.R.I. (R. W. Greeff and Co. Ltd.).

South Wales and Monmouthshire Section.—Monday January 4 at the Boot Hotel, Aberdare, at 7.30 p.m. 'Development and Uses of High Solids SBR Latex,' by J. Walker (Polymer (UK) Ltd.).

PLASTICS INSTITUTE

Midlands Section.—Monday January 11 at the James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m. 'Some Recent Developments in Plastics and Rubber Machinery,' by K. Wilson (David Bridge and Co. Ltd.). Joint meeting with the Midlands Section, the Institution of the Rubber Industry.

Increases of Capital

Halsen Asbestos and Engineering Co. Ltd. (394,052), 14 Billiter Street, E.C.3.—Increased by £20,000, in £1 ordinary shares, beyond the registered capital of £40,000.

NEW COMPANIES

Ceraco (Lancs.) Ltd. (642,661).—November 23. Capital: £900 in £1 shares. To carry on the business of manufacturers and merchants of chemicals of all kinds for the use in the manufacture or making of rubber, papers, paint, textile, food, metal, plastics and other commodities and products, etc. The directors are: Leon Stoger and John Waldie both of 323 Bury Old Road, Heaton Park, Prestwich, Manchester. Regd. office: 120 St. Anns Road, Prestwich, Manchester.

Spencer Bolton Developments Ltd. (642,772).—November 23. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in sponge rubber and plastic materials and synthetic materials of all kinds, etc. The directors are: Mrs Joan Jones, 81 Park Road, Bolton; Mrs May Spencer, 31 Falkland Road, Breightmet, Bolton. Regd. office: Court Chambers, Mawdsley Street, Bolton.

N Tyre Service, Ltd. (642,997).—November 25. Capital: £1,000 in £1 shares. To carry on the business of dealers in rubber tyres, tubes, etc. The directors are: Ralph R. Norris and Olive L. Norris, both of Barge Mab, Regents Canal, Paddington, London, W.2. Regd. office: 99 Baker Street, London, W.1.

Rosehaugh Rubber (Holdings) Ltd. (644,015).—December 9. Capital £90 in 600 shares of 3s. To acquire all or part of the issued share capital of Rosehaugh (Ceylon) Rubber Company Ltd. or all or any part of the undertaking, property and assets, etc. The first directors are to be appointed by the subscribers. Regd. office: 1 Broad Street Place, E.C.2.

Coating Contractors Ltd. (636,309).—September 2. Capital: £5,000 in £1 shares. To carry on the business of manufacturers of and dealers in all kinds of surfacing, surface preparation and coating materials, and anti-corrosion materials; fabricators of plastic, and/or elastomeric mouldings, applying materials for linings to tanks, vessels, pipes, pipe lines, etc. The directors are: Francis M. Richardson, Radclive Mill, Buckingham; Felix W. Mers, Home Farm Cottages, Buckingham; and Mark Waghorn.

KC (Plastics) Ltd. (636,408).—September 3. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in polythene and plastic bags and containers, polythene and plastic sheeting, etc. The directors are: Arthur King, 75 Glanden Drive, Cheadle, Hulme, Ches.; Edward F. Cornwall, 1 Springfield Road, Motterley, Ches.; Frederica M. King and Kathleen A. Cornwall. Regd. office: Adcroft Street, Stockport, Ches.

A. Taylor and Co. (Neath) Ltd. (636,314).—September 3. Capital: £2,000 in £1 shares. To carry on the business of manufacturers of and dealers in foam, rubber, sponge rubber, etc. The subscribers (each with one share) are: Alfred Taylor, Engineer and Mrs. Mary Taylor both of 'Kendor,' Longford Road, Neath Abbey, Neath, Glam. Regd. office: 'Kendor,' Longford Road, Neath Abbey, Neath, Glam.

Flexible Plastic Productions Ltd. (636,319).—September 3. Capital: £100 in £1 shares. The directors are: Frank Kemp, Mount View, Tattenham Crescent, Epsom Downs, Surrey; Robert Richards, 30 Waldegrave Gardens, Strawberry Hill, Middlesex. Regd. office: 223/225 Finsbury Pavement House, 120 Moorgate, E.C.2.

Valshaw Products Ltd. (636,531).—September 7. Capital: £100 in £1 shares. To carry on the business of retailers and/or wholesalers of all kinds of fancy goods whether made of wool cloth, leather, plastics, metal, etc. The directors are: Donald Shaw, Valerie Shaw, Violet Shaw, all of 5 Caravan Site, Bentley, near Doncaster. Regd. office: 73 Balby Road, Doncaster.

Latest Wills

Mr Isaac Borovitch, of 19 North Crescent, N.3, who died on September 5 1959 left £10,941 gross, £10,893 net value. (Duty paid £655.)

Mr Ralph Tom (or Ralph) Dark, of Plymtree, Seven Hills Road, Cobham, Surrey, and 198 Cambridge Road, Kingston-upon-Thames, tyre factor and tyre retailer, of Ralph Dark and Ralph Dark Ltd., who died on September 20 1959 left £74,154 gross, £65,253 net value. (Duty paid £12,645.)

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Please send written applications giving details of age, qualifications, experience, and quoting the reference number to DL.121, Personnel Department, Monsanto Chemicals Limited, Monsanto House, 10/18 Victoria Street, London, S.W.1. (385)

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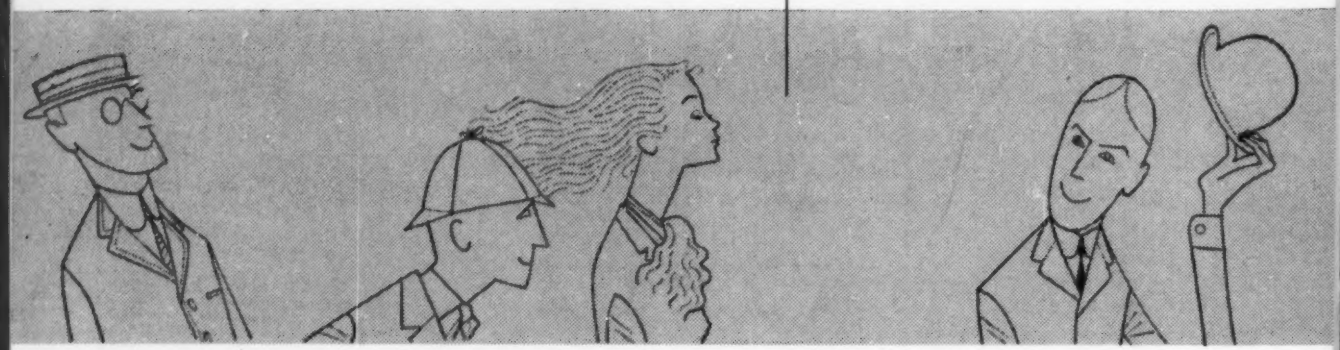

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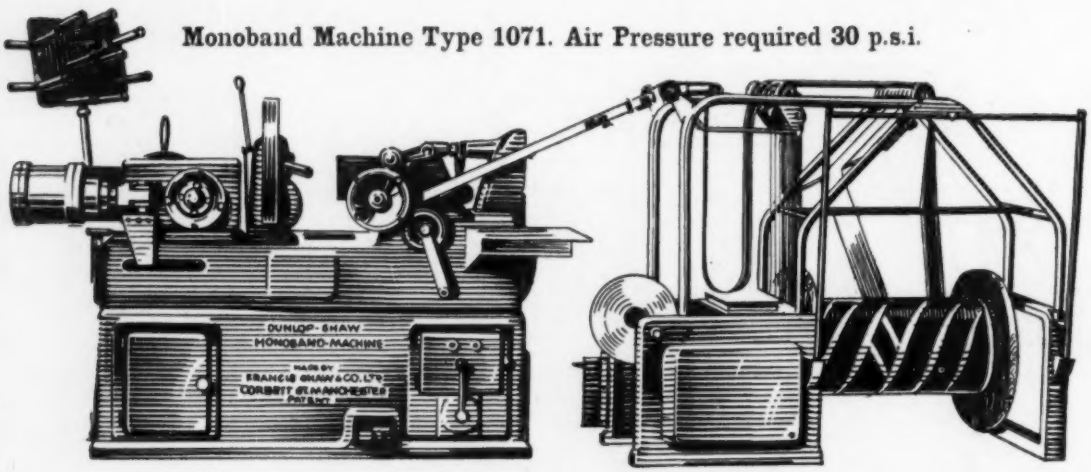

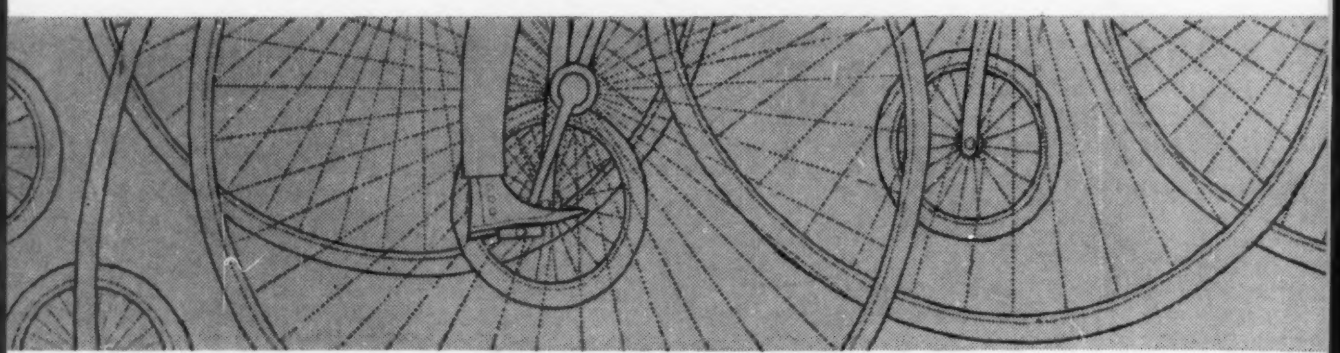

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